This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

Y 4.B22/3: S.hrg. 101-958

S. Hrg. 101-958

LEGISLATIVE PROPOSALS TO REAUTHORIZE THE DEFENSE PRODUCTION ACT OF 1950

HEARINGS

BEFORE THE

COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

SECOND SESSION

ON

S. 1379

PROPOSALS AUTHORIZING FUNDS FOR THE DEFENSE PRODUCTION ACT OF 1950

MARCH 1, 8, 22, 1990

Printed for the use of the Committee on Banking, Housing, and Urban Affairs

STANFORD UNIVERSITY
JAN 1991
JONSSON LIBRARY OF GOVT DOCUMENTS

CIS RECORD ONLY:

U.S. GOVERNMENT PRINTING OFFICE
31-600 WASHINGTON : 1990

For sale by the Superintendent of Documents, Congressional Sales Office
U.S. Government Printing Office, Washington, DC 20402

COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS

DONALD W. RIEGLE, Jr., Michigan, *Chairman*

ALAN CRANSTON, California
PAUL S. SARBANES, Maryland
CHRISTOPHER J. DODD, Connecticut
ALAN J. DIXON, Illinois
JIM SASSER, Tennessee
TERRY SANFORD, North Carolina
RICHARD C. SHELBY, Alabama
BOB GRAHAM, Florida
TIMOTHY E. WIRTH, Colorado
JOHN F. KERRY, Massachusetts
RICHARD H. BRYAN, Nevada

JAKE GARN, Utah
JOHN HEINZ, Pennsylvania
ALFONSE M. D'AMATO, New York
PHIL GRAMM, Texas
CHRISTOPHER S. BOND, Missouri
CONNIE MACK, Florida
WILLIAM V. ROTH, Jr., Delaware
NANCY LANDON KASSEBAUM, Kansas
LARRY PRESSLER, South Dakota

Steven B. Harris, *Staff Director and Chief Counsel*
Lamar Smith, *Republican Staff Director and Economist*
Patrick A. Mulloy, *Senior Counsel and International Affairs Adviser*

CONTENTS

THURSDAY, MARCH 1, 1990

Page

Opening statement of Chairman Riegle 1

Opening statements of:

  Senator Dixon 2

  Senator Bond 3

  Senator Garn 5

Senate bill S. 1379 7

WITNESSES

Jacques S. Gansler, senior vice president, The Analytic Sciences Corp., [TASC], Arlington, VA; on behalf of The Procurement Roundtable 64

  Prepared statement 69

Bernard L. Schwartz, chairman and CEO, Loral Corp., New York, NY; member, Department of Defense's Policy Advisory Committee on Trade and the Defense Manufacturing Board 83

  Prepared statement 88

Robert T. Marsh, U.S. Air Force, retired, chairman, Science and Technology Committee, Air Force Association, Arlington, VA; chairman of the board, Thiokol Corp 98

  Prepared statement 101

Paul F. Math senior associate director for Research, Development Acquisition, and Procurement, National Security and International Affairs Division, U.S. General Accounting Office 128

  Prepared statement 132

    Response to written questions of Senator Garn 377

THURSDAY, MARCH 8, 1990

Opening statements of:

  Senator Dixon 161

  Senator D'Amato 163

  Senator Sasser 163

WITNESSES

Thomas J. Murrin, Deputy Secretary, Department of Commerce 164

  Prepared statement 167

Jed L. Babbin, Deputy Under Secretary, Department of Defense 194

  Prepared statement 197

Allan V. Burman, Administrator-Designate, Office of Federal Procurement Policy, Office of Management and Budget 209

  Prepared statement 212

THURSDAY, MARCH 22, 1990

Opening statement of Chairman Riegle 243

Opening statements of :

  Senator Shelby 245

  Senator Heinz 272

31 452ST XL 937
10/96 53-005-00 GBC

Page
Opening statements of—Continued
  Senator Garn 273
  Senator D'Amato 350
  Senator Dixon 375

WITNESSES

William F. Paul, executive vice president, United Technologies Corp.; representing the Aerospace Industries Association 245
  Prepared statement 249
    Status of the aerospace industry 250
    Title I 253
    Offsets 253
    Definition of "Domestic Source" 255
    Title II 256
James L. Koontz, president and chief executive officer, Kingsbury Machine Tool Co.; representing National Center for Manufacturing Sciences 259
  Prepared statement 262
  Response to written questions of Senator Mack 380
David Dudon, president, Mutual Tool and Die, Inc., Dayton, OH; representing the National Tooling and Machining Association 273
  Prepared statement 276
    Executive summary 277
    Introduction 279
    Areas needing remedies 280
    Trade matters 282
    Offset policies 283
    The effect of offset on small business 284
    A U.S. offset policy should say: 285
    The industrial base 285
    Memoranda of understandings 286
    European community 1992 287
    Recommendations 288
    Sanctioned industry consortia 288
    Strengthening anti-trust protections 289
    Manpower 290
  Response to written questions of:
    Senator D'Amato 384
    Senator Mack 385
Alan Shaw, International Security and Commerce Program project director, Defense Technology Base Assessment Project, Office of Technology Assessment 293
  Prepared statement 337
  Response to written questions of:
    Senator Riegle 367
    Senator Bond 373
    Senator D'Amato 381

ADDITIONAL MATERIAL SUPPLIED FOR THE RECORD

OTA report entitled "Holding the Edge: Maintaining the Defense Technology Base" 294
United Technologies 361
Federal Emergency Management Agency 387
Testimony of the Aerospace Industries Association of America, Inc 404
Association of the National Defense Executive Reserve, letter of support for the continuation of the Defense Production Act of 1950 as amended and the conversion to permanent status of titles 1, 3, and 7 of the act 421
Statement of Dr. Walter Laberge 424

LEGISLATIVE PROPOSALS TO REAUTHORIZE THE DEFENSE PRODUCTION ACT OF 1950

THURSDAY, MARCH 1, 1990

U.S. SENATE,
COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS,
Washington, DC.

The committee met at 10 a.m., in room SD-538, Dirksen Senate Office Building, Senator Riegle (chairman of the committee) presiding.

Present: Senators Riegle, Cranston, Dixon, Heinz, and Bond.

OPENING STATEMENT OF CHAIRMAN RIEGLE

The CHAIRMAN. The committee will come to order.

We have this morning the developments of last night on the clean air legislation where marathon negotiations have apparently yielded a package which needs to be presented this morning to a caucus of each of the two parties in the Senate. So at a later hour this morning that will take place. I intend to remain here and conduct this hearing, but other colleagues will need to come and go because of that other requirement, very particularly, Senator Dixon, who has been a very strong leader on the question of changes and adjustments that need to be made with respect to the Defense Production Act, will I know at some point have to be over in that caucus.

I have got an opening statement that I will make, but I don't know if your time requirements, Senator Dixon, are such that you're going to have to leave soon.

Senator DIXON. I can stay for half an hour. I would like to make a short opening statement after you do.

The CHAIRMAN. Fine.

Over the past several years I have become increasingly concerned about the competitive ability of many of our most important industries and more generally about the ability of the United States to compete effectively in the fast developing and integrated global economy. It's obvious that if American industries cannot compete satisfactorily that there will be very serious consequences not only for our standard of living, which I think we are now seeing, but also for our national defense and our long-term security as well.

That is why during my chairmanship of this committee we are making this competitiveness problem both in manufacturing and in financial services and then the netting out of all of that on our economic strength a fundamental theme of the work of this committee.

Last year we held five hearings to examine concerns that had been expressed by many responsible Americans about the state of our country's industrial technological and financial base. Yesterday we began our 1990 hearings on competitiveness by having the Office of Technology Assessment release to us its new report entitled "Making Things Botter: Competing in Manufacturing."

That report, like many others that have examined this issue in some detail, concludes that American manufacturing is in deep trouble, and that we need a national strategy to turn things around. And that means a strategy that encompasses the public and private sector initiatives together.

While developing a national strategy will require the cooperation of the administration, which was described yesterday by the OTA report as "dozing at the switch," our committee I think can deal with very central parts of this problem in the legislation that we will be considering this year and I'm thinking of three specific items in particular: the Defense Production Act, the Export Administration Act, and the Fair Trade in Financial Services Act.

Last July Senators Dixon, Heinz, Shelby, Worth and D'Amato introduced S. 1379, a bill designed to strengthen our defense industrial base by amending the Defense Production Act.

Today's hearings and two other hearings, on March 8 and March 22, will focus on that bill, and other legislative proposals to reauthorize and amend the Defense Production Act which expires on August 10 of this year will also be taken up.

These hearings will also provide a forum for the discussion of other measures to deal with a July '88 DOD report entitled "Bolstering Defense Industrial Competitiveness" described—that report described an erosion of our industrial base that could "rob the U.S. of industrial capabilities critical to our national security."

So again I want to commend Senator Dixon and the other authors of S. 1379 for bringing their proposal before the committee.

We have an excellent panel of witnesses this morning and I look forward to hearing from them. In particular, I want to acknowledge Mr. Bernard Schwartz who is here, who is a friend and acquaintance of many years, and I'm particularly appreciative of the fact that he is with us, as well as the others.

With that, Senator Cranston.

Senator Cranston. I'd just like to apologize for the fact that I do have to attend that clean air meeting at 10:30 because of the major issues concerning California there. I will be aware of what you say if I don't hear it firsthand, and I also welcome you, Bornard Schwartz, a long-time friend and a man that I admire greatly.

The Chairman. Senator Dixon.

OPENING STATEMENT OF SENATOR DIXON

Senator Dixon. Thank you very much, Mr. Chairman, and thank you for your kind remarks. Under your leadership, of course, we resume the committee's legislative hearings today on the reauthorization of the Defense Production Act and S. 1379, the Defense Production Act Amendments of 1989.

I commend you for your attention that you've devoted to this array of complex issues to define the nation's industrial and technology base which supports national defense.

As you have observed, S. 1379, which I introduced with Senators Heinz, Shelby, Worth and D'Amato, modernizes the Defense Production Act of 1950 to provide to the President a more effective array of tools to meet the challenges of today and tomorrow.

Our fundamental objective is to strongly encourage expanded investment by industry in those segments of the nation's overall industrial and technology base that are essential to a strong national defense. It would also reauthorize existing authorities which have proven to be useful over the years.

During the first day of hearings of S. 1379, the committee received testimony from former senior Department of Defense officials, including the previous Under Secretary of Defense for Acquisition and the former Assistant Secretary of Defense for Manpower, Reserve Affairs, and Logistics, both of whom exercised policy direction for the Pentagon's industrial preparedness programs at different times during the 1980's.

We heard from the former commander of the U.S. Army Materiel Command, who as the Army's senior logistical commander was charged with translating policy action during the development of new equipment through acquisition and production to maintaining field and equipment in the hands of the troops.

Finally, we heard from representatives of firms from that most critical but too frequently forgotten segment of the industrial and technology base, the many tiers of subcontractors and suppliers. They realize too little benefit from existing industrial preparedness programs and they suffer more from short-sighted policies that deter investment.

Generally speaking, Mr. Chairman, all of these witnesses in my view support S. 1379. Today we will hear from an array of distinguished witnesses. They will continue the process of defining the challenges and suggesting the most effective means of addressing them, and I look forward to their testimony and welcome them here this morning.

The CHAIRMAN. Thank you very much, Senator Dixon.

Gentlemen, we appreciate your coming and preparing as you've done for this hearing this morning. We will make your formal statements a part of the record and as we go down through——

Senator BOND. Mr. Chairman.

The CHAIRMAN. I'm sorry. Excuse me, Senator Bond.

OPENING STATEMENT OF SENATOR BOND

Senator BOND. Mr. Chairman, I apologize for interrupting but I have to make a major presentation at 10:30 on clean air and I do have to leave. This is an area of great interest to me. I do want to make some brief opening statements and I'm very pleased that we are continuing our hearings on the Defense Production Act and that we do have such distinguished representatives of the defense industry to share their views on the proposed legislation.

Unfortunately, I was required, because of clean air negotiations all day yesterday—I was unable to attend the hearing in which the

Office of Technology Assessment released its report on manufacturing competitiveness.

I was disturbed to read a tone from the summaries of yesterday's testimony that OTA appears to be joining the ranks of those who think the way to help American industry is through government leadership and increased government involvement.

At a time when we can look to all parts of the globe and see capitalism triumphing over central state planning, it's ironic that there would be an argument that the country of the United States that we think of as the home of the effective implementation of this system might be moving in the opposite direction.

I think all of us in this room would agree that economic competitiveness and economic strength will be critical as we move into the 1990's and on into the 21st century. I simply cannot understand, however, how some can argue that the way to ensure our continued economic strength is to move away from the very principles which make us strong.

We are not blind to the fact that government can and should play a role in helping U.S. industry to be more competitive. Many of the steps we can take are obvious and have been discussed in this committee or will be discussed in the testimony here today—reforming our tax policy to encourage investment, reforming our antitrust policies, eliminating budget deficits, making sure that the coming generations are adequately trained and prepared and encouraged to focus on math and science.

I simply cannot agree, however, that it makes good sense to provide government bureaucrats the lead role to control our economic future by picking winners and losers. It didn't work in Poland. It won't work here. And I would only urge my colleagues to reconsider the very forceful remarks made on that subject by Lech Walesa when he lectured the joint session of the Congress.

Focusing on the defense industry for a moment, let me just reiterate again what I've said in past hearings on the issue. The way to ensure that we have a healthy defense industrial base in the future is not to create several new layers of bureaucracy and government regulations for industry to wade through. To the contrary, we must eliminate the bureaucratic extra levels, streamline regulations, remove the strings on the way they do business, and make the Pentagon a positive influence on the defense industry. Instead of prescribing new government solutions as the medicine to cure our sick defense industrial base, we should simply eliminate the causes of the disease—the regulations, specifications and profit limits and other government restrictions which make U.S. defense contractors unable to compete in the commercial marketplace.

I have reviewed Dr. Gansler's prepared statement and I believe he has framed the issue perfectly when he states, "The vision I would propose is one in which the U.S. defense industry is no longer a unique sector, but a largely indistinguishable part of an overall U.S. industrial base."

I would further agree with him that there are steps that can be taken with industry leadership. I think that is the important point, to revitalize the sector, such as R&D investments, guaranteed purchases and consortia, and so forth.

Again, I apologize to the witnesses and to the chairman for having to leave, but I assure that we are going to be following this testimony very closely and we look forward to working in this committee on this issue in the future.

Thank you very much, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Bond. Those are important comments. I apologize for not spotting you earlier.

Senator Heinz.

Senator HEINZ. Mr. Chairman, I'm going to be very brief because I have to find out what Senator Bond is going to report over in S. 224 at 10:30 and I won't be far behind, so I dare not let him out of my sight. But by all accounts, Kit, you did a great job yesterday.

Senator BOND. Thank you for your support.

Senator HEINZ. You got it.

I actually have two 10:30 meetings, that one and a Finance markup as you know, Mr. Chairman, but I do want to say that I've attended just about every hearing on this subject over the years. I think this is a very critical year for the reauthorization of the DPA. I'm glad you've got such a fine group of witnesses here, Mr. Chairman. I regret I won't be able to hear what they have to say.

I'm not going to give a prepared statement, but I do want to just indicate to you and to our witnesses that one of the issues that I hope they will address is one that Alan Bromley, in his November 29, 1989 remarks at a hearing before the subcommittee on Science and Technology made, with respect to the U.S. industrial base. He said that, "U.S. antitrust policy is not now in our nation's best economic interest."

Dr. Bromley did not elaborate on that, but it is a very important subject. It's important because there's a lot of disagreement about it. The conventional wisdom is that we should relax our antitrust policy to permit more cooperative ventures and, indeed, a major element of the trade bill that was passed in 1988 permits such activities under certain circumstances.

Recently I happened to be going over an analysis by Mike Porter of the Harvard Business School, who comes to a somewhat different conclusion. I find myself in the middle, because whatever it is we want to do we want to do the right thing. Those of you I hope will take a few minutes if you can in the course of your discussion to set us straight in whatever direction that may be.

Thank you.

The CHAIRMAN. Thank you, Senator Heinz.

We are going to start now with Dr. Jacques Gansler, who is going to set the stage in some respects for our discussion. He will be followed by Bornard Schwartz, by General Marsh, and then by Paul Math. So we will go in that order and again, I'd like you to summarize as directly as you can and then we will get into discussion.

Before we begin I have a statement from Senator Garn.

OPENING STATEAMENT OF SENATOR GARN

Senator GARN. I want to take a moment before we begin to welcome all our witnesses here this morning, and to personally welcome retired U.S. Air Force Gen. Robert T. Marsh, chairman of the board of the Thiokol Corp.

Yesterday we heard, from the Office of Technology Assessment, the elements of a competitiveness agenda. That agenda includes lower deficits, tax policies that support research and development and long term investment, better technical education, and direct Government support for high technology R&D and technology diffusion.

Today we begin to examine reauthorization of the Defense Production Act, a law that deals on a narrower scope with Government-industry relations in support of national security.

I support DPA authorities and believe they have been vital in ensuring Government access to materials and goods critical to national security. Last year destruction of the solid rocket fuel mixing machine at the Hercules plant, in my home State of Utah, resulted in a shortage of rocket fuel critical for rocket motor production for the Trident missile and the Titan IV and Delta II programs. DPA authority was used to establish temporary production until Hercules was able to resume regular production levels.

As today's witnesses discuss U.S. industrial dependency on foreign markets, let me emphasize that the United States must have a reliable source of supply for critical materials and products. While a mix of foreign and domestic producers can form the base for that source of supply, it would be foolhardy to rely solely on a foreign supplier for potential defense needs. With these of considerations in mind, DPA authorities should be extended and refined where appropriate. Strengthening the defense industrial base, however, requires a much broader action plan than DPA reform. We need to keep deficit reduction on track, cut capital gains rates, reform our antitrust rules and improve Government support for technology development and implementation.

I welcome the start of this effort today in the Banking Committee.

[Text of S. 1379 follows:]

II

101st CONGRESS
1st Session

S. 1379

To reauthorize and amend the Defense Production Act of 1950, and for other purposes.

IN THE SENATE OF THE UNITED STATES

July 24 (legislative day, January 3), 1989

Mr. Dixon (for himself, Mr. Heinz, Mr. Shelby, Mr. Wirth, and Mr. D'Amato) introduced the following bill; which was read twice and referred to the Committee on Banking, Housing, and Urban Affairs

---

A BILL

To reauthorize and amend the Defense Production Act of 1950, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Defense Production Act Amendments of 1989".

SEC. 2. CONGRESSIONAL FINDINGS.

The Congress finds that—

(1) the Defense Production Act of 1950 (50 U.S.C. App. 2061 et seq.) provides essential authority for—

(A) preserving and enhancing the defense industrial and technology base of the United States during peacetime; and

(B) mobilizing the Nation's productive capacity for national defense during periods of national emergency; and

(2) amendments to such Act are needed to—

(A) improve its utility to effectively sustain and develop the efficiency of the Nation's existing productive capacity necessary to meet national defense requirements;

(B) establish a revolving fund for improved management of the resources dedicated to defense industrial preparedness and the conduct of the programs authorized under the Act;

(C) facilitate use of such Act to foster the development of emerging technologies and advanced processes by providing appropriate protections for joint undertakings in research, development, production, and marketing; and

(D) eliminate outdated provisions that detract from the Act's usefulness as a primary set of authorities for the maintenance and enhancement of the defense industrial and technology base of the United States.

SEC. 3. TABLE OF CONTENTS.

TITLE I—AMENDMENTS TO THE DEFENSE PRODUCTION ACT OF 1950

PART A—DECLARATION OF POLICY

Sec. 101. Declaration of policy.

PART B—AMENDMENTS TO TITLE III OF THE DEFENSE PRODUCTION ACT

Sec. 111. Expanding the reach of existing authorities under title III.
Sec. 112. Sales or transfers of excess industrial resources.
Sec. 113. Defense Production Act fund.
Sec. 114. Annual report on impact of offsets.

PART C—AMENDMENTS TO TITLE VII OF THE DEFENSE PRODUCTION ACT

Sec. 121. Small business.
Sec. 122. Definitions.
Sec. 123. Delegation of authority; appointment of personnel.
Sec. 124. Rules, regulations, and orders.
Sec. 125. Antitrust protections for sanctioned industry consortia.
Sec. 126. Exemption from Administrative Procedure Act.
Sec. 127. Authority to review certain mergers, acquisitions, and takeovers.

PART D—TECHNICAL AMENDMENTS

Sec. 131. Priorities in contracts and orders.
Sec. 132. Loan guarantees.
Sec. 133. Investigations; records; reports; subpoenas.
Sec. 134. Employment of personnel.
Sec. 135. Authorization of appropriations.

PART E—REPEALERS AND CONFORMING AMENDMENTS

Sec. 141. Synthetic fuel action.
Sec. 142. Voluntary agreements and plans of action for international agreements for international allocation of petroleum products and related information systems.
Sec. 143. Authorization of appropriations.
Sec. 144. Joint committee on defense production.
Sec. 145. Small defense plants administration.
Sec. 146. Persons disqualified for employment.
Sec. 147. Feasibility study on uniform cost accounting standards; report submitted.
Sec. 148. National commission on supplies and shortages.

PART F—REAUTHORIZATION OF SELECTED PROVISIONS

Sec. 151. Authorization of appropriations.
Sec. 152. Termination of authorities.

TITLE II—ADDITIONAL PROVISIONS TO IMPROVE INDUSTRIAL PREPAREDNESS

PART A—INDUSTRIAL CAPABILITY AND NATIONAL SECURITY

Sec. 201. Industrial capabilities committee.
Sec. 202. Integration of national security policy and national economic policy.
Sec. 203. Assessing industrial responsiveness capabilities.

Part B—Encouraging Improvement of the Defense Industrial Base

Sec. 211. Encouragement of investment in advanced manufacturing technology and processes.
Sec. 212. Recognition of modernized production systems and equipment in contract award and administration.
Sec. 213. Support for the development and application of critical technologies.
Sec. 214. Procurement of critical items of supply.

Part C—Unfair Foreign Competition

Sec. 221. Evaluation of offers from sources other than domestic sources.
Sec. 222. Discouraging unfair trade practices.

TITLE III—AMENDMENTS TO RELATED LAWS

Sec. 301. Proceeds from sale of excess industrial plant equipment and facilities.
Sec. 302. Stockpiling of critical components.

TITLE IV—EFFECTIVE DATES

Sec. 401. Effective dates.

TITLE I—AMENDMENTS TO THE DEFENSE PRODUCTION ACT OF 1950

PART A—DECLARATION OF POLICY

SEC. 101. DECLARATION OF POLICY.

Section 2 of the Defense Production Act of 1950 (50 U.S.C. App. 2062) is amended to read as follows:

"SEC. 2. DECLARATION OF POLICY.

The vitality of the industrial and technology base of the United States is a foundation of national security. It provides the industrial and technological capabilities employed to meet national defense requirements, in peacetime and in time of national emergency. In peacetime, the health of the industrial and technology base contributes to the technological superiority of our defense equipment, which is a cornerstone of our national defense strategy, and the efficiency with which defense equipment is developed and produced. In times of crisis, a healthy industrial base will be able to effectively provide the graduated response needed to effectively meet the demands of the emergency.

To meet these requirements, the Act affords to the President an array of authorities to shape defense preparedness programs and to take appropriate steps to maintain and enhance the defense industrial and technology base.

PART B—AMENDMENTS TO TITLE III OF THE DEFENSE PRODUCTION ACT

SEC. 111. EXPANDING THE REACH OF EXISTING AUTHORITIES UNDER TITLE III.

(a) GUARANTEE AUTHORITY.—Section 301 of the Defense Production Act of 1950 (50 U.S.C. App. 2091) is amended—

(1) in subsection (a)(1), by striking "to expedite production and deliveries or services under Government contracts for the procurement of materials or the performance of services for the national defense" and inserting "to expedite or expand production and deliveries or services under Government contracts for the procurement of industrial resources or a critical technology for the national defense";

(2) by amending subsection (a)(3)(A) to read:

"(A) the guaranteed contract or operation is for industrial resources or a critical technology which is essential to the national defense;";

(3) in subsection (a)(3)(B), by striking "the capability for the needed material or service" and inserting "the needed industrial resources or critical technology";

(4) in subsection (e)(1)(A), by striking "Except during periods of national emergency declared by the Congress or the President" and inserting "Except as provided in subparagraph (D)";

(5) in subsection (e)(1)(C), by striking "$25,000,000" and inserting "$50,000,000"; and

(6) by adding at the end of subsection (e)(1), the following new subparagraph:

"(D) The requirements of subparagraphs (A), (B), and (C) may be waived during periods of national emergency declared by Congress or the President or upon a determination made by the President, on a nondelegable basis, that a specific guarantee must be promptly made to avert an industrial resource or critical technology shortfall that would severely impair national defense capability.".

(b) LOANS TO PRIVATE BUSINESS ENTERPRISES.—Section 302 of the Defense Production Act of 1950 (50 U.S.C. App. 2092) is amended—

(1) in subsection (a), by striking "for the procurement of materials or the performance of services for the national defense" and inserting "for the procurement of industrial resources or a critical technology for the national defense";

(2) in subsection (c)(1), by striking "No such loans may be made under this section, except during periods of national emergency declared by the Congress or the President" and inserting "Except as provided in paragraph (4), no loans may be made under this section";

(3) in subsection (c)(3), by striking "$25,000,000" and inserting "$50,000,000"; and

(4) in subsection (c), by adding at the end the following new paragraph:

"(4) The requirements of paragraphs (1), (2), and (3) of this subsection may be waived during periods of national emergency declared by Congress or the President, or upon a determination made by the President, on a nondelegable basis, that a specific guarantee must be promptly made to avert an industrial resource or a critical technology shortfall that would severely impair national defense capability.".

(c) PURCHASES AND PURCHASE COMMITMENTS.—

(1) Section 303 of the Defense Production Act of 1950 (50 U.S.C. App. 2093(a)) is amended to read as follows:

"(a)(1) To assist in carrying out the objectives of this Act, the President may make provision (A) for purchases of or commitments to purchase an industrial resource or a critical technology, for Government use or resale; and (B) for the encouragement of exploration, development, and mining of critical and strategic materials, and other materials. Purchases for resale under this subsection shall not include that part of the supply of an agricultural commodity which is domestically produced except insofar as such domestically produced supply may be purchased for resale for industrial use or stockpiling, and no commodity purchased under this subsection shall be sold at less than the established ceiling price for such commodity (except that minerals, metals, and materials shall not be sold at less than the established ceiling price, or the current domestic market price, whichever is lower), or, if no ceiling price has been established, the higher of the following: (i) The current domestic market price for such commodity, or (ii) the minimum sale price established for agricultural commodities owned or controlled by the Commodity Credit Corporation as provided in section 407 of Public Law 430, 81st Congress. No purchase or commitment to purchase any imported agricultural commodity shall specify a delivery date which is more than one year after the expiration of this section.

"(2) Except as provided in paragraph (4), the President may not execute a contract under this subsection unless the President determines that—

"(A) the industrial resource or critical technology is essential to the national defense;

"(B) without Presidential action under authority of this section, United States industry cannot reasonably be expected to provide the capability for the needed industrial resource or critical technology in a timely manner;

"(C) purchases, purchase commitments, or other action pursuant to this section are the most cost-effective, expedient, and practical alternative method for meeting the need; and

"(D) the United States national defense demand for the industrial resource or critical technology is equal to, or greater than the output of domestic industrial capability which the President reasonably determines to be available for national defense, including the output to be established through the purchase, purchase commitment, or other action.

"(3) Except as provided in paragraph (4), the President shall take no action under this section unless the industrial resource shortfall which such action is intended to correct has been identified in the Budget of the United States or amendments thereto, submitted to the Congress and accompanied by a statement from the President demonstrating that the budget submission is in accordance with the provisions of the preceding sentence. Any such action may be taken only after 60 days have elapsed after such industrial resource shortfall has been identified pursuant to the preceding sentence. If the taking of any action or actions under this section to correct an industrial resource shortfall would cause the aggregate outstanding amount of all such actions for such industrial resource shortfall to exceed $50,000,000, any such action or actions may be taken only if specifically authorized by law.

"(4) The requirements of paragraphs (1), (2), and (3) may be waived during periods of national emergency declared by Congress or the President, or upon a determination made by the President, on a nondelegable basis, that a specific purchase or purchase commitment must be promptly made to avert an industrial resource or a critical technology shortfall that would severely impair national defense capability."; and

(2) Section 303(b) of such Act is amended by striking "September 30, 1995" and inserting "a date that is not more than 10 years from the date such pur-

chase, purchase commitment, or sale was initially made".

SEC. 112. SALES OR TRANSFERS OF EXCESS INDUSTRIAL RESOURCES.

Section 303(f) of the Defense Production Act of 1950 (50 U.S.C. App. 2093(f)) is amended to read as follows:

"(f) Industrial resources acquired pursuant to the provisions of this section which, in the judgment of the President, are in excess of the needs of programs under this Act, shall be sold for industrial use pursuant to other Government programs or transferred to the National Defense Stockpile established by the Strategic and Critical Materials Stock Piling Act (50 U.S.C. 98 et seq.), when the President deems such action to be in the public interest. Sales or transfers made pursuant to this subsection shall be charged against or reimbursed from funds appropriated to such other Government programs or the National Defense Stockpile to which such resources were sold or transferred, at the current domestic market price for such industrial resources. For the purposes of subsection (c)(2), such sales or transfers shall be considered transactions entered into pursuant to the authority of subsection (a).".

SEC. 113. DEFENSE PRODUCTION ACT FUND.

(a) IN GENERAL.—Section 304 of the Defense Production Act of 1950 (50 U.S.C. App. 2094) is amended to read as follows:

"SEC. 304. DEFENSE PRODUCTION ACT FUND.

"(a) ESTABLISHMENT OF FUND.—There is established in the Treasury of the United States a separate fund to be known as the Defense Production Act Fund (hereinafter referred to as 'the Fund').

"(b) MONEYS IN FUND.—The following monies shall be credited to the Fund:

"(1) All monies appropriated hereafter for the Fund.

"(2) All monies received hereafter on transactions entered into pursuant to section 303.

"(3) All monies received hereafter under transfers made from the National Defense Stockpile Transaction Fund, pursuant to section 98h(c) of title 50, United States Code.

"(4) All monies received hereafter pursuant to section 204(h) of the Federal Property and Administrative Services Act of 1949 from the disposition of industrial plant equipment and production facilities no longer required for industrial base mobilization purposes.

"(c) USE OF FUND.—The Fund shall be available to carry out the provisions and purposes of title III, subject to the limitations set forth in this Act and in appropriations Acts.

"(d) DURATION OF FUND.—Monies in the Fund shall remain available until expended.

"(e) FUND BALANCE.—The Fund balance at the close of each fiscal year shall not exceed $250,000,000, excluding any monies appropriated to the Fund during that fiscal year. If at the close of any fiscal year the Fund balance exceeds such amount, the amount in excess of $250,000,000, excluding obligated funds appropriated to the Fund during that fiscal year, shall be paid into the general fund of the Treasury.

"(f) FUND MANAGER.—The Secretary of the Treasury shall designate a Fund manager. The duties of the Fund manager shall include—

"(1) determining the liability of the Fund in accordance with subsection (g);

"(2) certifying that the limitation contained in section 711(a)(4)(B) will not be exceeded by the additional obligation required by any agreement proposed under title III and providing authorization to enter into such agreement if such limitation is not exceeded; and

"(3) reporting to Congress each year regarding fund activities during the previous fiscal year.

"(g) LIABILITIES AGAINST FUND.—

"(1) **In general.**—When any agreement hereafter entered into pursuant to title III imposes contingent liabilities upon the United States, such liability shall be considered an obligation against moneys in the Fund. The amount of such obligation shall be determined for each fiscal year in accordance with paragraph (2).

"(2) **Determination of liability.**—For purposes of paragraph (1), the amount of obligations against the Fund shall be the greater of—

"(A) the aggregate outlays required by purchase or purchase commitment contracts, or financing agreements less the anticipated aggregate receipts from resale of materials purchased with moneys from the Fund and the anticipated receipts from the direct sale of materials by the producer to customers; or

"(B) one-third of the aggregate outlays required by purchase or purchase commitment contracts or financing agreements.

Anticipated receipts and anticipated reductions in purchase commitments shall be included under subparagraphs (A) and (B) only if a written plan for sale of materials has been developed, specifying probable customers, amount, time of the sales, and sales price.".

(b) CONFORMING AMENDMENTS.—Section 9 of the Strategic and Critical Materials Stock Piling Act (50 U.S.C. 98h) is amended—

(1) in subsection (b)(2), by adding after subparagraph (E), the following new subparagraph:

"(F) Transfer to the Defense Production Act Fund established pursuant to section 304(a) of the Defense Production Act of 1950."; and

(2) by amending subsection (c) to read as follows:

"(c)(1) Except as provided in paragraph (2), all moneys received from the sale of materials being rotated under the provisions of section 6(a)(4) or disposed of under section 7 shall be covered into the Fund and shall be available only for the acquisition of replacement materials.

"(2) Moneys derived from sales of materials to the public pursuant to section 6(a)(5) shall continue to be transferred to the Defense Production Act Fund established pursuant to section 304(a) of the Defense Production Act of 1950, until the aggregate amount of such transfers equals $10,000,000 for any fiscal year.".

(c) CAPITALIZATION OF FUND.—There shall be transferred to the Defense Production Act Fund, established by subsection (a) of this section, the sum of $200,000,000 from the unobligated balance of the National Defense Stockpile Transaction Fund (50 U.S.C. 98h).

SEC. 114. ANNUAL REPORT ON IMPACT OF OFFSETS.

Section 309 of the Defense Production Act of 1950 (50 U.S.C. 2099) is amended—

(1) in subsection (a)—

(A) by striking "Not later" and inserting "(1) Not later";

(B) by striking the second sentence; and

(C) by adding at the end the following new paragraph:

"(2) The Department of Commerce shall—

"(A) prepare the report required by paragraph (1);

"(B) consult with the Secretary of Defense, the Secretary of the Treasury, the Secretary of State, and the United States Trade Representative in preparation of such report; and

"(C) function as the President's Executive Agent for carrying out the requirements of this section.";

(2) by amending subsection (b) to read as follows:

"(b) INTERAGENCY STUDIES AND RELATED DATA.—

"(1) Each report required under subsection (a) shall be based on appropriate interagency studies which identify the cumulative effects (indirect as well as direct) of offset agreements on—

"(A) the full range of domestic defense productive capability (with special attention to the firms serving as lower-tier subcontractors or suppliers); and

"(B) the domestic defense technology base as a consequence of the technology transfers associated with such offset agreements.

"(2) Data developed or compiled by any agency while conducting such interagency study or other independent study or analysis shall be made available to the Secretary of Commerce to facilitate the Secretary in executing his responsibilities with respect to trade offset and countertrade policy development.";

(3) by adding at the end the following new subsections:

"(c) NOTICE OF OFFSET AGREEMENTS.—(1) If a United States firm enters into a contract for the sale of a weapon system or defense-related item to a foreign country or foreign firm and such contract is subject to an offset agreement exceeding $5,000,000 in value, such firm shall furnish an offset agreement to the official designated in the regulations promulgated to paragraph (2) information concerning such sale.

"(2) The information to be furnished shall be prescribed in regulations promulgated by the Secretary of Commerce.

Such regulations shall provide protection from public disclosure for information which is reasonably designated as proprietary or business confidential by the firm submitting such information, unless public disclosure is subsequently specifically authorized by such firm.

"(d) CONTENTS OF REPORT.—

"(1) IN GENERAL.—Each report under subsection (a) shall include—

"(A) a net assessment of the elements of the industrial base and technology base covered by the report;

"(B) recommendations for appropriate remedial action under the authorities provided by this Act, or other law or regulations;

"(C) a summary of the findings and recommendations of any interagency studies conducted during the reporting period under subsection (c);

"(D) a summary of offset arrangements concluded during the reporting period for which information has been furnished pursuant to subsection (c); and

"(E) a summary and analysis of any bilateral and multilateral negotiations relating to use of offsets completed during the reporting period.

"(2) ALTERNATIVE FINDINGS.—Each report may include any alternative findings or recommendations offered by any departmental Secretary, agency head, or the United States Trade Representative to the Secretary of Commerce. Such alternative finding or recommendation may be included if the Secretary of Commerce has been furnished the independent study or analysis upon which such alternative finding or recommendation is based during the preparation of the report.

"(e) UTILIZATION OF ANNUAL REPORT IN NEGOTIATIONS.—The findings and recommendations of the reports required by subsection (a), and the various interagency reports and analyses providing the basis for such reports shall be considered by representatives of the United States during bilateral and multilateral negotiations to minimize the adverse effects of offsets.".

PART C—AMENDMENTS TO TITLE VII OF THE DEFENSE PRODUCTION ACT

SEC. 121. SMALL BUSINESS.

Section 701 of the Defense Production Act of 1950 (50 U.S.C. App. 2151) is amended to read as follows:

"SEC. 701. SMALL BUSINESS.

"(a) PARTICIPATION.—Small business concerns shall be given the maximum practicable opportunity to participate as contractors, and subcontractors at various tiers, in all programs to maintain and strengthen the Nation's industrial base and technology base undertaken pursuant to this Act.

"(b) ADMINISTRATION OF ACT.—In administering the programs, implementing regulations, policies, and procedures under this Act, requests, applications, or appeals from small business concerns shall, to the maximum extent practicable, be expeditiously handled.

"(c) ALLOCATIONS UNDER SECTION 101.—Whenever the President invokes the power to allocate any material pursuant to section 101 of this Act, small business concerns shall be accorded, so far as practicable, a fair share of such material, in proportion to the share received by such business concerns under normal conditions, giving such special consideration as may be possible to new small business concerns or individual firms facing undue hardship.".

SEC. 122. DEFINITIONS.

Section 702 of the Defense Production Act of 1950 (50 U.S.C. App. 2152) is amended to read as follows:

"SEC. 702. DEFINITIONS.—As used in this Act—

"(1) CRITICAL COMPONENT.—The term 'critical component' shall include components, subsystems, systems, and related special tooling and test equipment essential to the production, repair, maintenance, or operation of weapon systems or other military equipment assigned a priority designation by the Secretary of Defense.

"(2) CRITICAL TECHNOLOGY.—The term 'critical technology' shall include a technology that is included in one or more of the plans submitted pursuant to section 2368 of title 10, United States Code, unless subsequently deleted, or such other emerging or dual use technology as may be designated by the President. A list of critical or emerging technologies shall be maintained and periodically published in the Federal Register and printed in the Code of Federal Regulations.

"(3) DEFENSE CONTRACTOR.—The term 'defense contractor' means any person who enters into a contract with the United States to furnish materials, industrial resources, or a critical technology, or to perform services for the national defense.

"(4) DOMESTIC SOURCE.—The term 'domestic source' means a business entity that performs substantially all of the research and development, engineering, manufacturing, and production activities required of such firm as a defense contractor in the United States or Canada.

"(5) FACILITIES.—The term 'facilities' shall include all types of buildings, structures, or other improvements to real property (but excluding farms, churches or other places of worship, and private dwelling houses), and services relating to the use thereof.

"(6) INDUSTRIAL RESOURCES.—The term 'industrial resources' means materials, services, processes, or manufacturing equipment (including the processes, technologies, and ancillary services for the use of such equipment) needed to establish or maintain an efficient and modern national defense industrial capacity.

"(7) MATERIALS.—The term 'materials' shall include raw materials (including minerals, metals, and advanced processed materials), commodities, articles, components (including critical components), products, items of supply, and such technical information or services ancillary to the use thereof.

"(8) NATIONAL DEFENSE.—The term 'national defense' means programs for military and energy production or construction, military assistance to any foreign nation, stockpiling, space, and directly related activity.

"(9) NONDOMESTIC SOURCE.—The term 'nondomestic source' means a business entity other than a 'domestic source'.

"(10) PERSON.—The term 'person' includes an individual, corporation, partnership, association, or any other organized group of persons, or legal successor or representative thereof.

"(11) SERVICES.—The term 'services' includes any effort that is needed or incidental to—

"(A) the development, production, processing, distribution, delivery, or use of an industrial resource or a critical technology, or

"(B) the construction of facilities.".

SEC. 123. DELEGATION OF AUTHORITY; APPOINTMENT OF PERSONNEL.

Section 703 of the Defense Production Act of 1950 (50 U.S.C. App. 2153) is amended to read as follows:

"SEC. 703. DELEGATION AND CIVILIAN PERSONNEL.

"(a) DELEGATION OF AUTHORITY.—Except as otherwise specifically provided, the President may—

"(1) delegate any power or authority conferred upon him by this Act to any officer or agency of the Government;

"(2) authorize such redelegation by that officer or agency head as the President may deem appropriate; and

"(3) establish such new agencies as may be necessary to manage Federal emergency preparedness programs.

"(b) CIVILIAN PERSONNEL.—Any officer or agency head may appoint civilian personnel without regard to section 531(b) of title 5, United States Code, and without regard to the provisions of such title governing appointments in the competitive service, and may fix the rate of basic pay for such personnel without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates, except that no individual so appointed may receive pay in excess of the annual rate of basic pay payable for GS–18 of the General Schedule, as the President deems appropriate to carry out the provisions of this Act.".

SEC. 124. RULES, REGULATIONS, AND ORDERS.

Section 704 of the Defense Production Act of 1950 (50 U.S.C. App. 2154) is amended to read as follows:

"SEC. 704. RULES, REGULATIONS, AND ORDERS.

"The President may make such rules, regulations, and orders as he deems appropriate to carry out the provisions of this Act. This authority shall be exercised in conformity with section 709 of this Act.".

SEC. 125. ANTITRUST PROTECTIONS FOR SANCTIONED INDUSTRY CONSORTIA.

Section 708 of the Defense Production Act of 1950 (50 U.S.C. App. 2158) is amended to read as follows:

"SEC. 708. SANCTIONED INDUSTRY CONSORTIA.

"(a) ANTITRUST PROTECTION.—The President may authorize the establishment of sanctioned industry consortia, in accordance with subsection (e), to provide industrial resources or critical technologies found to be essential for the preservation or enhancement of the industrial or technology base of the United States supporting the national defense. Except as provided in subsection (j) of this section, no criminal or civil action may be brought under the antitrust laws against any participant in a sanctioned industry consortium for activities conducted in establishing such a consortium or in undertaking a plan of action within the scope of the charter of the sanctioned consortium.

"(b) DEFINITIONS.—As used in this section—

"(1) The term 'antitrust laws' means—

"(A) the Act entitled 'An Act to protect trade and commerce against unlawful restraints and monopolies and for other purposes', approved July 2, 1890, commonly referred to as the 'Sherman Act' (15 U.S.C. 1 et seq.);

"(B) the Act entitled 'An Act to supplement existing laws against unlawful restraints and monopolies and for other purposes', approved October 15, 1914, commonly referred to as the 'Clayton Act' (15 U.S.C. 12 et seq.);

"(C) the Federal Trade Commission Act (15 U.S.C. 41 et seq.);

"(D) sections 73 and 74 of the Act entitled 'An Act to reduce taxation, to provide revenue for the Government, and for other purposes', approved August 27, 1894, commonly referred to as the 'Wilson Tariff Act' (15 U.S.C. 8 and 9);

"(E) the Act of June 19, 1936, chapter 592 (15 U.S.C. 13, 13a, 13b, and 21a);

"(F) the Act entitled 'An Act to promote export trade and for other purposes', approved April 10, 1918, commonly referred to as the 'Webb-Pomerene Act' (15 U.S.C. 61–65); and

"(G) similar laws enacted by the several States.

"(2) The term 'flexible manufacturing network' means a specified program relating to the joint development, engineering, production, and marketing of one or more products by the network's participants for their common benefit, including—

"(A) the coordination of the individual engineering, purchasing, manufacturing, quality assurance, inventory control, and other activities by the participants to attain the network's specified program objectives, or the joint undertaking of such activities by two or more of the network's participants;

"(B) the collection and sharing of information among the network's participants relating to manufacturing capacity, production costs, distribution capabilities, and potential markets for the specified products being produced by such network; and

"(C) the collection and sharing of such other technical or business information as may be reasonably required to undertake the network's specified program.

"(3) The term 'plan of action' means any of one or more documented methods adopted by participants in a sanctioned industry consortium (or voluntary agreement) to implement the purposes and objectives of such consortium or agreement.

"(4) The term 'sanctioned industry consortium' means an arrangement among two or more entities for the purpose of jointly undertaking a specific program of basic research, research and development, production, marketing, any specified combination of the foregoing activities, or a flexible manufacturing network relating to industrial resources or critical technologies found to be essential to the preservation or enhancement of the industrial or technology base of the United States supporting the national defense. Such participating entities may include for-profit business concerns, not-for-profit entities, and educational institutions. The term also includes a voluntary agreement described in paragraph (5).

"(5) The term 'voluntary agreement' means an agreement approved by the President, which—

"(A) results from consultation by the President with representatives of industry, business, financing, agriculture, labor, and other interests,

"(B) is to provide for defense of the United States through the development of preparedness programs and the expansion of productive capacity and supply, and

"(C) is a result of a finding by the President that conditions exist which pose a direct threat to national security and preparedness programs.

"(c) DELEGATION OF PRESIDENTIAL AUTHORITY.—The authority granted to the President in this section may be delegated to one or more individuals whose appointments shall be subject to the advice and consent of the Senate.

"(d) FORMATION OF SANCTIONED INDUSTRY CONSORTIUM.—(1) Persons in the private sector interested in forming a sanctioned industry consortium may make application in a form and containing such information as required by regulations promulgated pursuant to subsection (h).

"(2) Promptly after an application is received, a notice shall be published in the Federal Register announcing that an application for the establishment of a sanctioned industry consortium has been submitted, identifying each participating entity, and describing the activities to be undertaken by such consortium.

"(3) Not later than 7 days after an application has been submitted, a copy of the application shall be transmitted to the Attorney General and the Chairman of the Federal Trade Commission, accompanied by any supporting information submitted with the application, and any other information necessary to make a determination as to whether the proposed consortium should be sanctioned and established.

"(e) CRITERIA FOR SANCTIONING CONSORTIUM.—(1) A proposed industry consortium shall be sanctioned if it is determined that such industry consortium—

"(A) will provide at least one domestic source for industrial resources or critical technologies that will substantially enhance the capability of the industrial and technology base to support national defense requirements,

"(B) includes participants that are reasonably representative of the overall industry, "(C) will not constitute unfair competition or a substantial restraint of trade with respect to other persons within the United States who may be sources of the same industrial resources or critical technology, and

"(D) will not unreasonably enhance, stabilize, or depress prices for the industrial resources or critical technologies that are the subject matter of such consortium's proposed activities.

"(2) Such application for the establishment of a sanctioned industry consortium shall be reviewed by the Attorney General, the Chairman of the Federal Trade Commission, and such other officers of the Executive as may be designated by the President in accordance with the requirements of paragraph (1) and such other evaluation criteria as may be specified in the regulations promulgated pursuant to subsection (h).

"(3) Not later than 90 days after the receipt of an application and not earlier than 30 days after the publication of the notice required by subsection (d)(2), such application shall be approved or disapproved. The reasons for disapproval shall be specified in writing.

"(4) Approval of an application shall be evidenced by the issuance of a charter which shall specify any special terms, conditions, or limitations which are deemed necessary by the President, the Attorney General, or the Chairman of the Federal Trade Commission to assure compliance with the standards of paragraph (1) or such additional requirements as may be specified in the regulations promulgated pursuant to subsection (h).

"(5) Upon approval of a sanctioned industry consortium a Government employee shall be assigned as a principal liaison to such consortium pursuant to the regulations described in subsection (h).

"(f) CONSORTIUM ADVISORY COUNCIL.—A sanctioned industry consortium is authorized to organize an advisory council, specifying the membership, functions, and operating procedures of such council in its application.

"(g) CHARTER.—(1) MODIFICATION.—The charter of a sanctioned industry consortium may be modified during its term. A request for a modification initiated by the consortium shall be considered and approved in the same manner as an original charter application. A charter modification, directed by the President, shall be implemented within 30 days of the receipt of a notice of such a Presidential direction (unless extended by the President), or the consortium shall lose its protections under subsection (a).

"(2) TERMINATION.—A sanctioned industry consortium may be terminated by the President upon a finding that the industry consortium is no longer conducting its activities in conformity with this section, the regulations promulgated pursuant to subsection (h), or the terms of the consortium's charter. Such notice shall specify the reasons for the determination to terminate the consortium, and afford the consortium at least 30 days to respond, in accordance with appeal procedures specified in the regulations promulgated pursuant to subsection (h).

"(h) REGULATIONS.—(1) The President shall promulgate regulations to implement this section. The preparation of such regulations, and modifications thereto, shall include the participation of the Attorney General, the Chairman of the Federal Trade Commission, and such other officers of the Executive as the President may deem appropriate.

"(2) In addition to regulations required by this section and such matters as the President deems appropriate for the effective administration of the program, the regulations required by paragraph (1) shall address the following matters:

"(A) In order to be accorded protections under subsection (a), affected persons shall furnish to the Attorney General and the Chairman of the Federal Trade Commission—

"(i) notice at least 10 days prior to initiating discussions among the prospective participants,

"(ii) notice of and the opportunity for representatives of the Attorney General and the Chairman of the Federal Trade Commission to participate in all meetings, and

"(iii) a transcript of the proceedings of each such meeting.

"(B) Opportunity shall be provided for designated Government representatives to attend any meeting sponsored by such consortium.

"(C) Opportunity for public participation in such consortium meetings shall be provided, unless the matters to be discussed at such meetings fall within a category described in paragraphs (1), (3), or (4) of section 552(b) of title 5, United States Code.

"(D) Access shall be provided for inspecting and copying, at reasonable times and upon reasonable notice, the records of the sanctioned industry consortium by representatives of the Attorney General, the Chairman of the Federal Trade Commission, and the individual designated as the Government's principal liaison to such sanctioned industry consortium.

"(E) Public access shall be provided to the Government's records relating to the establishment or conduct of a sanctioned industry consortium, subject to the limitations of paragraphs (1), (3), and (4) of section 552(b) of title 5, United States Code.

"(i) EXEMPTION FROM FEDERAL ADVISORY COMMITTEE ACT.—The activities of a sanctioned industry consortium (including any advisory council established by such consortium) are exempt from the provisions of the Federal Advisory Committee Act (5 U.S.C. App.), and the regulations promulgated thereunder, if such activities are conducted in compliance with this section, the regulations promulgated pursuant to subsection (h), and the terms of the consortium's charter.

"(j) REMEDIES.—(1) Any person who has been injured with respect to any act or omission committed in connection with the organization or operation of a sanctioned industry consortium may bring a civil action for injunctive relief or for breach of contract if—

"(A) such act or omission occurred—

"(i) in the course of organizing a sanctioned industry consortium pursuant to subsection (d), or

"(ii) while undertaking the sanctioned activities of the consortium pursuant to its charter, and

"(B) the person committing such act or omission failed to comply with the scope and limitations of its charter, the requirements of this section, or the regulations promulgated pursuant to subsection (h).

"(2) A person injured as a result of an act or omission described in paragraph (1) may be awarded—

"(A) actual damages, including interest on such damages, and

"(B) in the case of any successful action to enforce liability under this section, the costs of such action together with reasonable attorney's fees.

"(3) Any action commenced under this subsection shall proceed as if it were an action commenced under section 4 or section 16 of the Clayton Act, except that the standards applicable to the sanctioned industry consortium shall be the requirements of this section, the regulations promulgated pursuant to subsection (h) and the charter of such consortium. The remedies provided in this subsection shall be the exclusive remedies available to a plaintiff.

"(4) Any action under paragraph (1) shall be brought within 2 years of the discovery of the facts indicating that the sanctioned industry consortium has failed to comply with the requirements of this section, the regulations promulgated pursuant to subsection (h), or the charter of such consortium, but not later than 4 years from the date the cause of action arises.

"(5) In any action brought under paragraph (l), there shall be a presumption that the activities of a sanctioned industry consortium which are within the scope and limitations of its charter comply with the requirements of this section.

"(6) In any action brought under paragraph (l), if the court finds that the challenged conduct was undertaken by the sanctioned industry consortium within the scope and limitations of its charter, the requirements of this section, and the regulations promulgated pursuant to subsection (h), the court may award to the person against whom the claim is brought the cost of defending such claim (including reasonable attorney's fees).".

SEC 126. EXEMPTION FROM ADMINISTRATIVE PROCEDURE ACT.

Section 709 of the Defense Production Act of 1950 (50 U.S.C. App. 2159) is amended to read as follows:

"SEC. 709. EXEMPTION FROM ADMINISTRATIVE PROCEDURE ACT.

"Any rule, regulation, order, or amendment thereto promulgated under the authority of this Act shall not be subject to the requirements of sections 551 through 559 of title 5, United States Code. Each proposed rule or regulation, and each amendment thereto, shall be published for public comment in the Federal Register in conformity with the requirements of section 22 of the Office of Federal Procurement Policy Act (41 U.S.C. 418b) and chapter 6 of title 5, United States Code.".

SEC 127. AUTHORITY TO REVIEW CERTAIN MERGERS, ACQUISITIONS AND TAKEOVERS.

Section 721 of the Defense Production Act of 1950 (50 U.S.C. App. 2170) is amended by striking subsection (d)(1) and inserting the following:

"(1) there is evidence that leads the President to believe that completion of the foreign merger, acquisition, or takeover may threaten to impair the national security, and".

PART D—TECHNICAL AMENDMENTS

SEC. 131. PRIORITIES IN CONTRACTS AND ORDERS.

Section 101 of the Defense Production Act of 1950 (50 U.S.C. App. 2071) is amended—

(a) in subsection (a)(2) by striking "allocate materials and facilities" and inserting "materials, services, and facilities";

(b) in subsection (c)(1) by striking "supplies of materials and equipment" and inserting "materials, equipment, and services";

(c) by striking paragraphs (2) and (3) and inserting the following new paragraph:

"(2) The authority granted by this subsection may not be used to require priority performance of contracts or orders, or to control the distribution of any supplies of materials, service, and facilities in the marketplace, unless the President submits to the Congress a finding that—

"(A) such materials, services, and facilities are scarce, critical, and essential—

"(i) to maintain or expand exploration, production, refining, transportation,

"(ii) to conserve energy supplies; or

"(iii) to construct or maintain energy facilities; and

"(B) maintenance or expansion of exploration, production, refining, transportation, or conservation of energy supplies or the construction and maintenance of energy facilities cannot reasonably be accomplished without exercising the authority specified in paragraph (1) of this subsection."; and

(d) by redesignating paragraph (4) as paragraph (3).

SEC. 132. LOAN GUARANTEES.

Section 301(e)(2)(B) of the Defense Production Act of 1950 (50 U.S.C. App. 2091(e)(2)(B)) is amended by striking "and to the Committees on Banking and Currency of the respective Houses" and inserting "and to the Committee on Banking, Housing, and Urban Affairs of the Senate and the

Committee on Banking, Finance and Urban Affairs of the House of Representatives".

SEC. 133. INVESTIGATIONS; RECORDS; REPORTS; SUBPOENAS.

Section 705 of the Defense Production Act of 1950 (50 U.S.C. App. 2155) is amended—

(1) in subsection (a), by striking "subpena" and inserting "subpoena";

(2) by redesignating subsections (c), (d), (e), and (f) as subsections (b), (c), (d), and (e), respectively;

(3) in subsection (c) (as redesignated by paragraph (2)), by striking "$1,000" and inserting "$10,000"; and

(4) in subsection (d) (as redesignated by paragraph (2)), by striking all after the first sentence.

SEC. 134. EMPLOYMENT OF PERSONNEL.

Section 710 of the Defense Production Act of 1950 (50 U.S.C. App. 2160) is amended—

(1) in subsection (b), by striking paragraph (6), and inserting the following:

"(6)(A) The departmental Secretary or an agency head making the appointment shall publish a notice in the Federal Register including the name of the appointee, the employing department or agency, the title of the position to which such individual is being appointed, the name of such individual's employer when selected for appointment, and a statement that the individual has made a filing in accordance with subparagraph (B) which is available for inspection.

"(B) Each individual selected for appointment under the authority of this subsection shall furnish to the departmental Secretary or agency head making the appointment—

"(i) a list of the names of each corporation, partnership, or other business in which such individual has an interest, and

"(ii) a list of any financial interest such individual had during the 60-day period preceding such appointment, including any office or directorship held in a corporation.

"(C) Each individual shall submit the information described in subparagraph (B) annually on the anniversary of such individual's appointment.";

(2) in paragraph (7) of subsection (b)—

(A) by striking "Chairman of the United States Civil Service Commission" and inserting "the Director of the Office of Personnel Management";

(B) by striking "Joint Committee on Defense Production"; and

(3) in paragraph (8) of subsection (b), by striking "transportation and not to exceed $15 per diem in lieu of subsistence while away from their homes and regular places of business pursuant to such appointment" and inserting "reimbursement for travel, subsistence, and other necessary expenses incurred by them in carrying out the functions for which they were appointed in the same manner as persons employed intermittently in the Federal Government are allowed expenses under section 5703 of title 5, United States Code".

SEC. 135. AUTHORIZATION OF APPROPRIATIONS.

Section 711(a)(1) of the Defense Production Act of 1950 (50 U.S.C. App. 2161) is amended by striking "Bureau of the Budget" and inserting "Office of Management and Budget".

PART E—REPEALERS AND CONFORMING AMENDMENTS

SEC. 141. SYNTHETIC FUEL ACTION.

Section 307 of the Defense Production Act of 1950 (50 U.S.C. App. 2097) is repealed.

SEC. 142. VOLUNTARY AGREEMENTS AND PLANS OF ACTION FOR INTERNATIONAL AGREEMENTS FOR INTERNATIONAL ALLOCATION OF PETROLEUM PRODUCTS AND RELATED INFORMATION SYSTEMS.

Section 708A of the Defense Production Act of 1950 (50 U.S.C. App. 2158a) is repealed.

SEC. 143. AUTHORIZATION OF APPROPRIATIONS.

Section 711 of the Defense Production Act of 1950 (50 U.S.C. App. 2161) is amended—

(1) by striking subsection (b),

(2) by striking "(a)(1) Except as provided in paragraph (2) and paragraph (4)" and inserting "(a) Except as provided in subsection (c)",

(3) by striking in subsection (a) in the parenthetical "and for the payment of interest under subsection (b) of this section", and

(4) by striking paragraph (2) and redesignating paragraph (3) as subsection (b), and

(5) by striking subparagraph (B) of paragraph (4) and redesignating paragraph (4)(A) as subsection (c).

SEC. 144. JOINT COMMITTEE ON DEFENSE PRODUCTION.

Section 712 of the Defense Production Act of 1950 (50 U.S.C. App. 2162) is repealed.

SEC. 145. PERSONS DISQUALIFIED FOR EMPLOYMENT.

Section 716 of the Defense Production Act of 1950 (50 U.S.C. App. 2165) is repealed.

SEC. 146. FEASIBILITY STUDY ON UNIFORM COST ACCOUNTING STANDARDS; REPORT SUBMITTED.

Section 718 of the Defense Production Act of 1950 (50 U.S.C. App. 2167) is repealed.

SEC. 147. NATIONAL COMMISSION ON SUPPLIES AND SHORTAGES.

Section 720 of the Defense Production Act of 1950 (50 U.S.C. App. 2169) is repealed.

PART F—REAUTHORIZATION OF SELECTED PROVISIONS

SEC. 151. AUTHORIZATION OF APPROPRIATIONS.

Section 711(c) of the Defense Production Act of 1950 (as amended by section 143 of this Act) is amended to read as follows:

"(c) There is authorized to be appropriated for fiscal years 1990, 1991, 1992, and 1993 not to exceed $250,000,000 to carry out the provisions of sections 301, 302, and 303 of this Act.".

SEC. 152. SUNSET.

Section 717 of the Defense Production Act of 1950 (50 U.S.C. App. 2166) is amended to read as follows:

"**SEC. 717. SUNSET.**

"(a)(1) Sections 101, 102, 103, 105, and 106 of this Act, and all authority conferred thereunder, shall terminate at the close of September 30, 1993.

"(2) Sections 301, 302, 303, 304 of this Act, and all authority conferred thereunder, shall terminate at the close of September 30, 1993.

"(3) Sections 701, 702, 703, 704, 705, 706, 707, 708, and 711 of this Act, and all authority conferred thereunder shall terminate at the close of September 30, 1993.

"(4) Section 104 of title II, and title VI of this Act, and all authority conferred thereunder, shall terminate at the close of June 30, 1953.

"(5) Title IV and title V of this Act, and all authority conferred thereunder, shall terminate at the close of April 30, 1953.

"(6) Except as otherwise provided, all other provisions of this Act, and all authority conferred thereunder, shall remain in effect.

"(b) The termination of any section of this Act, or any agency or corporation utilized under this Act shall not affect the disbursement of funds under, or the carrying out of, any contract, guarantee, commitment or other obligation entered into pursuant to this Act prior to the date of such termination, or the taking of any action necessary to preserve or protect the interests of the United States in any amounts advanced or paid out in carrying on operations under this Act, or the taking of any action (including the making of new guarantees) determined by a guaranteeing agency to be necessary to accomplish the orderly liquidation, adjustment or settlement of any loans guaranteed under this Act, including actions considered necessary to avoid undue hardship to borrowers in reconverting to normal civilian production; and all of the authority granted to the President, guaranteeing agencies, and fiscal agents under section 301 of this Act shall be applicable to actions taken pursuant to the authority contained in this subsection.".

TITLE II—ADDITIONAL PROVISIONS TO IMPROVE INDUSTRIAL PREPAREDNESS

PART A—INDUSTRIAL CAPABILITY AND NATIONAL SECURITY

SEC. 201. INDUSTRIAL CAPABILITIES COMMITTEE.

(a) ESTABLISHMENT.—The President shall promptly establish, through the issuance of an executive order or such other means as may be appropriate, an Industrial Capabilities Committee or other appropriate forum, to exercise the responsibilities described in subsection (b).

(b) RESPONSIBILITIES.—The forum established pursuant to subsection (a) shall exercise the following responsibilities, in addition to such others as the President may assign,:

(1) Analyze, on an ongoing basis, the demands to be placed upon industry by the national defense plans and industry's capabilities to fulfill those expectations in peacetime as well as in time of war or national emergency.

(2) Review major Government policies and their impact on the defense industrial and technology base.

(3) Develop a process for periodic industry-wide assessment of technological advancement and production capabilities in relation to national security objectives.

(4) Review existing industrial policy objectives, laws, and regulations, and recommend to the President modifications that foster industrial innovation, modernization, and productivity.

(5) Develop proposals for selectively expanding national defense production to respond to graduated levels of mobilization.

SEC. 202. INTEGRATION OF NATIONAL SECURITY POLICY AND NATIONAL ECONOMIC POLICY.

It is the sense of the Congress that—

(1) the national security of the United States would benefit from greater integration of national economic policies (including tax and trade) and national security policies; and

(2) such objective would be fostered by—

(A) designating the Secretary of Defense as a member of the Economic Policy Council, and

(B) establishing a Defense Working Group within the President's Economic Policy Council.

SEC. 203. ASSESSING INDUSTRIAL RESPONSIVENESS CAPABILITIES.

It is the sense of the Congress that, from time to time, the President should conduct of one or more exercises to assess the capability of the defense industry's capability to respond to increased demands for defense material and services under various graduated mobilization response conditions.

PART B—ENCOURAGING IMPROVEMENT OF THE DEFENSE INDUSTRIAL BASE

SEC. 211. ENCOURAGEMENT OF INVESTMENT IN ADVANCED MANUFACTURING TECHNOLOGY AND PROCESSES.

The President, acting through the Administrator for Federal Procurement Policy, shall prescribe an acquisition policy that encourages contractors to invest in advanced manufacturing technology, advanced production equipment, and advanced manufacturing processes. Such policy shall provide for—

(1) an increased allowance for profit under a contract if the contractor, a subcontractor, or a supplier invests in any such advanced technology, equipment, or process in connection with the performance of such contract; and

(2) assignment of increased weight to source selection criteria relating to the efficiency of production.

SEC. 212. RECOGNITION OF MODERNIZED PRODUCTION SYSTEMS AND EQUIPMENT IN CONTRACT AWARD AND ADMINISTRATION.

(a) In General.—The President, acting through the Administrator for Federal Procurement Policy, shall prescribe an acquisition policy requiring, to the maximum extent practicable, that the acquisition plan for any major system acquisition, or any other acquisition program designated by the Secretary or agency head responsible for such acquisition, provide for contract solicitation provisions which encourage competing offerors to acquire for utilization in the performance of the contract modern industrial facilities and production systems (including hardware and software), and other modern production equipment, that increase the productivity of the offerors and reduce the costs of production.

(b) Authorized Solicitation Provisions.—Contract solicitation provisions referred to in subsection (a) may include any of the following provisions:

(1) An evaluation advantage in making the contract award determination.

(2) An increase of not more than 10 percent in the amount which would otherwise be reinbursable to a contractor as the Government's share of costs incurred for the acquisition of production special tooling, production special test equipment, and production special systems (including hardware and software) for use in the performance of the contract.

(3) A provision for the contractor to share in any demonstrated cost savings that are attributable to increased productivity resulting from the following contractor actions not required by the contract—

(A) the acquisition and utilization of modern industrial facilities and production systems (including hardware and software), and other modern production equipment, for the performance of the contract; or

(B) the utilization of other manufacturing technology improvements in the performance of the contract.

SEC. 213. SUPPORT FOR THE DEVELOPMENT AND APPLICATION OF CRITICAL TECHNOLOGIES.

The President, acting through the Administrator for Federal Procurement Policy, shall prescribe an acquisition policy authorizing a departmental secretary or agency head to restrict to domestic sources the competition for all or a portion of a contract opportunity to fulfill the requirements for materials, components, or items of supply that are the products of, or are manufactured through the application of a critical technology as defined in section 702 of the Defense Production Act of 1950 (50 U.S.C. App. 2152). Each procurement restricted pursuant to this subsection shall be justified on a case-by-case basis. Such procurements shall represent not more than the minimum aggregate quantity necessary to sustain at least one domestic source determined to be essential to national security.

SEC. 214. PROCUREMENT OF CRITICAL ITEMS OF SUPPLY.

(a) MAINTAINING DOMESTIC SOURCES.—The President, acting through the Administrator for Federal Procurement Policy, shall prescribe an acquisition policy authorizing a departmental secretary or an agency head to make a noncompetitive contract award pursuant to the authority provided in section 2304(c)(3)(A) of title 10, United States Code, or section 303(c)(3)(A) of the Federal Property and Administrative Services Act of 1949 (41 U.S.C. 253(b)(3)(A)), as appropriate, for the procurement of any critical item of supply from a domestic source in order to maintain at least one domestic source determined to be essential to national security. The requirements of section 2304(f) of title 10, United States

Code, or section 303(f) of the Federal Property and Administrative Services Act of 1949 (41 U.S.C. 253(f)) shall apply to a contract awarded pursuant to this subsection.

(b) SUBCONTRACTING.—The President, acting through the Administrator for Federal Procurement Policy, shall prescribe an acquisition policy requiring that the solicitation for the procurement of any major system, or such other procurements as may be specified in accordance with such acquisition policy, shall—

(1) specify the minimum percentage of the total estimated value of the contract that is to be performed by one or more domestic firms;

(2) provide for the attainment of such requirement by the firm as prime contractor, or by subcontractors pursuant to a subcontracting plan submitted with the firm's offer;

(3) specify that a source selection factor relating to the requirement specified in subparagraph (A) shall accord—

(A) such source selection factor a value not to exceed 10 percent of the total evaluation points for all source selection factors specified in the solicitation; and

(B) such evaluation points in proportion to the extent to which each offer meets or exceeds the specified percentage;

(4) provide that attainment of the percentage specified in the offer of the firm receiving the award shall be a material element of contractual performance; and

(5) require the contractor to—

(A) identify, at the conclusion of contract performance, each subcontractor whose performance is to be counted towards attainment of the contractual requirement specified pursuant to paragraph (1); and

(B) provide prompt notice to the contracting officer after replacing any such subcontractor.

(c) CRITICAL ITEMS OF SUPPLY.—The President, acting through the Secretary of Defense, shall—

(1) determine, for the purposes of this section, the items of supply that are critical items; and

(2) publish a list of such critical items in the Federal Acquisition Regulation.

PART C—UNFAIR FOREIGN COMPETITION

SEC. 221. EVALUATION OF OFFERS FROM SOURCES OTHER THAN DOMESTIC SOURCES.

(a) IN GENERAL.—The President, acting through the Administrator for Federal Procurement Policy, shall prescribe an acquisition policy for evaluating contract offers received from nondomestic sources with respect to a price advantage such nondomestic source may have over a domestic source as a result of any unfair advantage. The policy shall provide for the application of price evaluation factors to the offers of such nondomestic sources when necessary to counter any such unfair advantage.

(b) DEFINITION.—As used in this section, the term "unfair advantage" means—

(1) direct or indirect subsidization of a nondomestic source by a foreign government or other foreign entity; or

(2) exemption of a nondomestic source from the application of a statute, regulation, or executive order of the United States relating to environmental protection, fair labor standards, or subcontracting participation by small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals and members of other designated groups, applicable to domestic sources.

SEC. 222. DISCOURAGING UNFAIR TRADE PRACTICES.

(a) SUSPENSION OR DEBARMENT AUTHORIZED.—A finding that a contractor has engaged in an unfair trade practice, as defined in subsection (b), shall indicate a lack of business integrity or business honesty that seriously and directly affects the responsibility of the contractor to perform any contract awarded by the Federal Government or perform a subcontract under such a contract. Such contractor shall be subject to suspension and debarment in accordance with subpart 9.4 of title 48, Code of Federal Regulations (or any successor regulation).

(b) DEFINITIONS.—For purposes of this section, the term "unfair trade practice" means the commission of any of the following acts by a contractor:

(1) An unfair trade practice, as determined by the International Trade Commission.

(2) A violation of any agreement of the Coordinating Committee on Export Controls or any similar bilateral export control agreement, as determined by the Secretary of Commerce.

(3) A false certification concerning the foreign content of an item of supply, as determined by the Secretary of the department or the head of the agency to which such certificate was furnished.

TITLE III—AMENDMENTS TO RELATED LAWS

SEC. 301. PROCEEDS FROM SALE OF EXCESS INDUSTRIAL PLANT EQUIPMENT AND FACILITIES.

Section 204 of the Federal Property and Administrative Services Act of 1949 (41 U.S.C. 485) is amended—

(1) by amending subsection (a) to read as follows:

"(a) DISPOSITION OF RECEIPTS.—All proceeds under this subchapter from any transfer of excess property to a Federal agency for its use, or from any sale, lease, or other disposition of surplus property shall be covered into the Treasury as miscellaneous receipts, except as provided in subsections (b), (c), (d), (e), and (h) of this section."; and

(2) by adding at the end the following new subsection:

"(h) CREDIT TO DEFENSE PRODUCTION ACT FUND ON CERTAIN TRANSACTIONS.—Where the property transferred or disposed of was industrial plant equipment or production facilities determined by the Secretary of Defense to be no longer required for mobilization of the defense industrial base, the costs of disposal or transfer of such equipment or facilities may be paid from the proceeds of such disposition or transfer and the net proceeds of the disposition or transfer shall be covered into the Defense Production Act Fund, established pursuant to section 304 of the Defense Production Act of 1950 (50 U.S.C. App. 2094).".

SEC. 302. STOCKPILING OF CRITICAL COMPONENTS.

Section 12(1) of the "Strategic and Critical Materials Stock Piling Act" (50 U.S.C. 98h–3(1)) is amended to read as follows:

"(1) The term 'strategic and critical materials' means—

"(A) materials that (i) would be needed to supply the military, industrial, and essential civilian needs of the United States during a national emergency, and (ii) are not found or produced in the United States in sufficient quantities to meet such needs, and

"(B) components of major weapon systems, or other items of military equipment, essential to the production, repair, maintenance, or operation of such systems or equipment, which the Secretary of Defense determines are not produced in the United States or Canada in sufficient quantities to meet defense mobilization needs, and must be stockpiled in order to most effectively meet such mobilization needs.".

TITLE IV—EFFECTIVE DATES

SEC. 401. EFFECTIVE DATES.

(a) Except as provided in subsection (b), the provisions of this Act shall take effect on September 30, 1989.

(b) The acquisition policies required by sections 214 and 221 of the Act shall be promulgated within 180 days. Such policies shall apply to solicitations issued 60 days after the promulgation of procurement regulations implementing such acquisition policies.

○

STATEMENT OF JACQUES S. GANSLER, SENIOR VICE PRESIDENT, THE ANALYTICAL SCIENCES CORP. [TASC], ARLINGTON, VA; REPRESENTING THE PROCUREMENT ROUNDTABLE

Mr. GANSLER. Thank you, Mr. Chairman.

This is clearly a critical time and a critical set of hearings. I think it's appropriate to remember that there are really two issues before us in these hearings.

First is the extension of the Defense Production Act of 1950; and the objective here to extend it for four years rather than what has been done sometimes, only for a six-month period.

The second objective is to discuss amendments to it that could greatly broaden its application and its use. So I would like to briefly touch on both of these items.

In terms of the original act, if you'll recall, it had seven Titles to it and there are only three in effect today. The other four have expired and have not been renewed. Let me just briefly touch on the three, because the three that are still in place are actively in use, in many cases.

Title I grants to the President the power to prioritize the performance of specific contracts to meet urgent defense requirements and then to allocate resources to industries to optimize production of defense materiel. That has been used in peacetime a number of times in crises. A plant blows up and it has to be replaced. In fact, there are examples of where it's been replaced in 1 year instead of 3 years because priorities were exercised. Another example that I recall is when we provided equipment to Israel and we had to replace our tanks. We exercised the priorities in order to then resupply ourselves, in that case more rapidly.

So even in the peacetime environment the priorities acts are in existence and in use.

The second of the major titles still around is title III, which authorizes the President to use loans, loan guarantees, purchase commitments, and grants to encourage contractors to establish or expand activities that would provide increased domestic industrial capability for defense needs.

Presently, the purchase commitment is the only title III incentive being used, but it is a very effective guarantee and, in fact, the example that comes to mind is where there was a particular item that the Department of Defense was purchasing sole source—critical electronics equipment, from France—and as a result of using title III we established a United States competitor to the French operation by guaranteeing purchases.

The one point I might make about title III is that the funding for that has been extremely unstable; and one of the issues that's before you, in terms of amendments, would be to increase the stability of the funding in that area.

The last of the three existing titles is title VII and that authorizes the President to provide antitrust defenses. That gets somewhat to what Senator Heinz was asking about for conducting joint activities, under voluntary agreements, aimed at solving production distribution problems that might impair national defense preparedness.

The creation of such voluntary agreements has to be initiated by the President. It has to be approved by the Attorney General and the Chairman of the Federal Trade Commission before any antitrust protections are accorded to the participants.

In addition, there was more recently added to it the section 721 which provides for involvement of the President in areas such as foreign purchases of U.S. defense firms, a growing issue that I'm sure we will talk about as well.

Now, to summarize on the current act, it's my opinion that the Defense Production Act is the cornerstone of present U.S. industrial preparedness efforts. Virtually all of the programs that are aimed at improving our industrial preparedness draw their authority either implicitly or explicitly today from the Defense Production Act.

I think there's no question that the condition of the defense industrial base is fundamental to our deterrent, to our economy, to our government procurements, and to our arms control agreements—in terms of responsiveness—and, thus, it seems to me it's a critical issue to try to maintain, but I would argue even more strongly, to reinvigorate the Defense Production Act and the programs associated with it. It's a meaningful barometer of how the U.S. views industrial strength and industrial preparedness.

The point I want to make is, regardless of any amendments that we talk about relative to the Defense Production Act, it seems to me that we want to extend the Defense Production Act and we want to do it for a significant period of time, because it is a valuable tool for our industrial base.

Now to shift to the amendments, it seems to me that the Government here has an opportunity to take action which will help to reverse the current decline in both our defense industrial base and our international industrial competitiveness. In my opinion, to date, insufficient attention has been paid to this need for action in these two areas and each day lost here will definitely cause an adverse impact.

The hardest part that the Nation seems to have is to accept the fact that traditional U.S. policy paradigms have lost their relevance in this area. I believe we can no longer assume that economic and security issues can be separately treated. We can no longer assume that a self-contained industrial base is there for the U.S. defense establishment. We can no longer assume that the Government is not involved in international industrial competitiveness. We can no longer assume that a U.S. technological leadership exists in the military-relevant technologies. We can no longer assume that an available U.S. skilled labor force exists and we can no longer assume that what is in the U.S. corporations' interest is necessarily in the nation's interest.

These are assumptions that we have been making and our policy is based on it and I'm not suggesting they don't exist, but I'm saying we cannot assume them. We have to assure that they do exist.

New national policies, based on a recognition of the changed realities, are therefore required. The objectives have to be to assure that in areas such as trade, tax policy, education, financial markets, government R&D investments, defense procurement practices, and the many other ways in which the Government in fact does today affect the industry structure, conduct and performance, we address the effectiveness of those actions.

We should have the U.S. taking actions which will allow and incentivize market operations that will achieve results that strengthen both our nation's security and our national industrial competitiveness.

Unfortunately, today, that is not the case. Current U.S. Government policies actually result in high cost of capital, poor education of our future workers, short-term investment incentives, uncompetitive international trade practices, high cost and low quality goods—especially in our defense-related products—and a general government-industry relationship which has the two sides in constant opposition rather than working together toward a common long-term set of national goals.

Our focus has to be to use public policy to help, rather than continue to retard, America's industrial competitiveness. The purpose of the needed government actions should be to allow and encourage U.S. firms to achieve the rapid market adjustments required for today's changes in technology, management and international forces. I believe a place to start is the defense industrial base. No one can argue that this is an area in which the Government is totally involved, and it has to remain so. Neither can one argue that any of the classic "myths of the market" exist, for here there is, in fact, no free market at work to achieve economic efficiency. There's only a single buyer—for one condition.

Second, we have a de facto defense industrial policy, and we implement it every day through the actions that we take—positive or negative.

Finally, in this defense industry section, every day we do "pick winners and losers". We have to do so. We have an approximately $38 billion R&D program in which we decide whether it's going to be gallium arsenide or hula hoops, and we properly decide between those as to what's in the interest of national security.

The problem is that our de facto defense industrial strategy is not a coherent one and is often a counterproductive one. The results, as has been frequently stated, is that there are dramatic signs of deterioration of the defense industrial base and they are all around us, and in my prepared comments I list a significant number of these.

The fact that many of these problems appear to have worsened, not improved, during the past decade of high defense spending levels, poses a paradox for those who argue that increased spending can cure the structural problems or that the market will provide solutions.

As future defense spending declines, we can be sure that these problems will grow even worse, unless we take actions to address them.

Perhaps of greatest concern to me is the rapid loss of U.S. technological leadership in critical defense technologies, both product and process technologies—weapons and production process technologies. The high cost, high risk, and long time period that will be involved in reversing these declining technological leadership trends make it essential that it be addressed through a joint public-private sector effort, essentially as you said, Mr. Chairman.

I would point out that recently Defense Secretary Cheney wrote—and I quote here—"The United States cannot persist in its current laissez-faire approach to the competition in advanced technologies without incurring major economic and security problems of its own in the future."

To respond to this concern, I believe it is necessary to agree on a clear vision of the structure of the defense industry that we would want, as we enter the 21st century, and then to initiate a consistent set of government and industry actions to move us there during the decade of the 1990s.

The vision that I would propose is one in which the U.S. defense industry is no longer a unique sector but a largely indistinguishable part of an overall U.S. industrial base; one that would produce goods for both civil and military needs and would do this in common, integrated factories.

Ruggedized, commercial equipment, in areas such as electronics, today is often lower in cost, higher in quality, and more advanced in performance, for the same environments as equivalent military equipment. Additionally, modern, automated, flexible manufacturing factory equipment allows multiple products to be produced efficiently in the same plant; thus allowing not only economies of scale but also rapid conversion in the event that a crisis occurs and we need to rapidly respond, or peace breaks down again and we shift into a surge condition—for example, a break-out from arms control.

However, unique military buying practices, regulations, specifications, standards and so forth all retard or even prohibit such military-civil integration. Clearly, this defense uniqueness has to be stopped. It is no longer affordable and today's technology does not require it.

Once integration has been achieved, then the DOD can gain from the cost, quality and delivery of superior commercial equipment. Additionally, the U.S. economy can gain from the dual-use advantages of the R&D and capital investments that are made by the Department of Defense. We could then build up a domestic engineering and manufacturing base which today we have allowed to decline.

To implement this future vision of the U.S. defense industrial base, the DOD, as the primary defense buyer, must acknowledge its responsibility for the health, innovativeness, responsiveness, and domestic viability of the industry. It has to take the lead, along with strong congressional support, not opposition, in a government-wide, four-part action plan to reverse this trend. I have defined the four parts in my prepared statement and so I won't go through those.

But I must emphasize that only if we take these actions with a dual-use objective in mind, namely the defense industrial base and commercial competitiveness, will we explicitly achieve the objectives that we set out to do. If we develop, for example, advanced display systems, we cannot use specialized military specs and unique defense standards. Instead, we have to use commercial components, commercial specifications and standards, and most importantly, commercial buying practices. I must emphasize that it is up to the Congress to allow us to use commercial buying practices, in order to do that.

As it becomes recognized that the U.S. Government is significantly involved in the issue of national competitiveness, then the critical question is, who is going to take the responsibility?

Today, unfortunately, there is no obvious answer. It is clear that the answer has to go well beyond the establishment and implementation of a defense industrial strategy. Yet, I believe that that's an ideal place to start.

The achievement of a vision for the future defense industrial base, such as that which I've described in my prepared remarks, will clearly take many years and will require continuous leadership. It will also require many government actions. I believe that much of what is proposed in Senator Dixon's bill on the Defense Production Act is a move in the right direction. In my prepared comments I've pointed out some of the areas that I'd like to make some changes in that bill.

In summary, this hearing and the proposed resultant legislation can be important steps in achieving the needed changes that the Nation must undertake to reverse the disastrous dual trends of a deteriorating defense industrial base and of a declining U.S. industrial competitiveness. The committee is to be commended for its initiative. Our future military and economic security depend upon the continuation of such steps.

Thank you, Mr. Chairman.

[The complete prepared statement of Jacques S. Gansler follows:]

TESTIMONY BEFORE THE
SENATE BANKING COMMITTEE
ON THE RENEWAL OF THE DEFENSE
PRODUCTION ACT AND PROPOSED
AMENDMENT THERETO (S.1379)

Jacques S. Gansler
Washington, D.C.
March 1, 1990

March 1, 1990

Strengthening America's Industrial Base

Jacques S. Gansler*

The timing of these hearings is critical. The U.S. government has an opportunity to take actions which will reverse the current decline in both our defense industrial base and our international industrial competitiveness. To date, insufficient attention has been paid to this need for action -- and each day lost will make the reversal that much more difficult.

Clearly, we are living in a rapidly changing world. Many of these changes impact directly on U.S. security and competitiveness. To be in a strong position in the future, we must recognize and adjust to the changes -- not simply be content with our current status. Consider four critical changes and their effects:

- The changing U.S./Soviet relations and changes in Eastern Europe lead to a reduced defense budget and the need for a restructured defense program,
- The growing drug war and 3rd World, "hi-tech" military capabilities lead to a shift in how our national security resources are spent,
- Globalization of technology, industry, and finance lead to changes in trade and technology transfer policies, and
- The growing economic power of Japan and the European community raise the issue of "economic security" as a critical element of "national security."

---

*Dr. Gansler is Senior Vice President of TASC (The Analytic Sciences Corporation). He is a former Deputy Assistant Secretary of Defense, a former electronics industry executive, and the author of ***The Defense Industry*** (MIT Press, 1980) and ***Affording Defense*** (MIT Press, January 1989). He is also a faculty member of the Kennedy School of Government, Harvard University; and a Director of the Procurement Round Table.

The hardest thing for the U.S. to accept is that traditional U.S. policy paradigms have lost their relevance. For example:

- We can no longer assume that economic and security issues can be separately treated.
- We can no longer assume a self-contained defense industry.
- We can no longer assume that government is not involved in international industrial competitiveness.
- We can no longer assume a U.S. technological leadership in military-relevant technologies.
- We can no longer assume an available U.S. skilled labor force.
- We can no longer assume that what is in a U.S. corporation's interest is necessarily in the nation's interest.

New national policies, based on a recognition of the changed realities, are required. The objectives must be to assure that in areas such as trade policy, tax policy, education, financial markets, government R&D investments, defense procurement practices, and the many other ways in which government affects industry "structure, conduct and performance," the U.S. takes actions which allow, and even incentivize, market operations that will achieve results that strengthen both our nation's security and our national industrial competitiveness. Unfortunately, today that is not the case. Current U.S. government policies actually result in: high costs of capital, poor education of our future workers, short-term investment incentives, uncompetitive international trade practices, high cost and low quality goods (especially in defense-related products), and a general government/industry relationship which has the two sides in constant opposition -- rather than working together toward a common set of long-term national goals.

As long as we were the undisputed economic and military leader of the world we could afford to essentially ignore the coming realities. But today the economic, military, and political changes around the world can no longer be ignored. This hearing is one attempt to have these changes gain greater recognition and, hopefully, to have some steps taken to change U.S. policies -- toward being consistent with the needs of today's realities; to use public policy to help -- rather than continue to retard -- America's industrial competitiveness.

The purpose of the needed government action should be to allow, and encourage, U.S. firms to achieve the rapid market adjustments required for today's changes in technology, management, and international forces. A place to start is with the defense industrial base -- an area in which, clearly, the government is totally involved, and must remain so. Here, one cannot argue any of the classic "myths of the market." For example:

- We cannot state that "the free market will achieve economic efficiency;" since, with a single buyer, and usually only one supplier of an individual weapon system, there are no market incentives to achieve the needed efficiency. Historical data, showing high and rising costs with inadequate quality, is evidence of the failure of this myth.

- Similarly, to state that "we will not have a defense industrial policy" is again to ignore reality, since the government is already totally involved in the defense industry (as the buyer, the banker, the specifier, the regulator, the user, and even the Court of Claims). Thus, its daily actions establish its industrial policy -- whether good or bad.

- Finally, one cannot argue that "we will not pick winners and losers," when the DoD spends over $35B a year on research and development, by definition "picking" some areas and giving less attention to other areas -- thus clearly determining which technologies will be sponsored and which ones will not.

The problem is that the nation has a de facto defense industrial strategy that is not coherent and is often counter-productive. The results, as Senator Jeff Bingaman recently stated, are that "the signs of deterioration of the defense industrial base are all around us." These include:

- Rapidly rising military equipment costs
- Inadequate quality of products produced
- Lack of surge capability (for increased production)
- Increasing lead times (for new products)
- Excess capacity at the prime contractor level
- Heavy debt structure
- Lack of parts suppliers
- Lack of cost-reducing capital investments
- Growing dependence on offshore purchases of parts
- Growing dependence on foreign sales of equipment
- Increasing foreign ownership of domestic plants
- Difficulty of getting a skilled work force
- Difficulty of getting U.S. graduate engineers
- Almost total separation of most firms" military and civil operations (due to the low efficiency in defense)

The fact that many of these problems appear to have worsened -- not improved -- during the past decade of high defense spending levels poses a real paradox for those who argue that increased spending can cure the structural problems -- or that "the market" will provide solutions. And, as future defense spending declines, we can be sure that these problems will grown even worse, unless we take actions now to address them.

Perhaps of greatest future concern is the rapid loss of U.S. leadership in critical defense technologies -- both product (weapon) and process (manufacturing) technologies -- that has either already taken place or is projected over the coming years. The high cost, high risk, and long time period that will be involved in reversing this technology leadership trend make it essential that it be addressed through a "joint public-private sector" effort. As Defense Secretary Cheney wrote in the 1989 edition of "Soviet Military Power" (page 133):

> "In the years ahead, the United States will confront new challenges, perhaps from a revitalized and restructured Soviet economy, but almost certainly from a unified and competitive Europe, a dynamic Japanese economy, rapidly developing countries like South Korea and Singapore ... [all having] implications for the US techno-industrial base and, by extension, the military balance. . . . [as a consequence] the United States cannot persist in its current laissez-faire approach to the competition in advanced technologies without incurring major economic and security problems of its own in the future."

To respond to this concern, it is necessary to agree on a clear "vision" of the structure of the defense industry that we will require as we enter the 21st century, and then to initiate a consistent set of government and industry actions to move us there during the decade of the 1990s. The "vision" I would propose is one in which the U.S. defense industry is no longer a "unique" sector, but a largely indistinguishable part of an overall U.S. industrial base -- one that would produce goods for both civil and military needs; and would do this in common (integrated) factories. Ruggedized, commercial equipment (in areas such as

electronics) today is often lower in cost, higher in quality, and more advanced in performance -- for the same environments -- than equivalent military equipment. Additionally, modern, automated, "flexible manufacturing" factory operations allow multiple products to be produced efficiently in the same plants (thus allowing great economies of scale in peacetime, and rapid conversion, in order to increase military production, should world conditions demand it). However, unique military buying practices, regulations, specifications, standards, etc. all retard -- or even prohibit -- such military-civil integration. Clearly, this "defense uniqueness" must be stopped! It is no longer affordable, and today's technology does not require it.

Once integration can be achieved, then not only will the DoD gain from the cost, quality, and delivery of superior commercial parts and equipment, but overall U.S. industrial competitiveness will be enhanced by the "dual use" applicability of the large, annual Department of Defense R&D and capital equipment investments. Finally, based on defense needs, highly-selected critical technologies can be nurtured sufficiently to be able to build up a domestic engineering and manufacturing base -- both to satisfy the military's needs and to strengthen our economic security and international industrial competitiveness.

To implement this future "vision" of the U.S. defense industrial base, the DoD -- as the primary defense buyer -- must acknowledge its responsibility for the health, innovativeness, responsiveness, and domestic viability of the industry, and it must take the lead in a government-wide, four-part action plan to: first, reverse the many harmful defense procurement steps taken in recent years (e.g., reduced profits, reduced cash flow, cost sharing on high-risk R&D, and excessive intrusion in contractor operations); second, create an overall "environment" to improve U.S. international competitiveness (addressing: antitrust, capital markets, trade, R&D and capital investment incentives, and education); third, encourage a dramatic restructuring of the

defense industry by removing the barriers to civil/military integration (from unique military specifications and thousands of special regulations, through special cost accounting and data rights); and, fourth, select a few "critical defense sectors" of the U.S. economy and -- with industry leadership -- take actions to revitalize these sectors (e.g., with R&D investments, guaranteed purchases, consortia, etc.). It is important to emphasize that most of these critical sectors would be at the lower tiers of the defense industry (the materials, parts, and manufacturing process levels), and they are likely to be "dual use" industries -- thus, also helping U.S. industrial competitiveness.

A key point to make is that these four sets of actions must fit into an integrated plan. All four are required. For example, individual government investments without an overall "environment" change would not work (since there would be insufficient industry incentives to build on the original investment); nor would shifting to buying commercial components without domestic R&D incentives (it would simply shift more procurement offshore); nor would defense funding of R&D without consideration of potential commercial needs (it would only result in more "specialized, high-cost, military" parts). Fortunately, since critical defense technology areas today greatly overlap with the essential needs of the civilian economy (e.g., advanced semiconductors, new structural materials, software productivity, advanced production equipment, and telecommunications) the actions taken for defense reasons can dramatically improve U.S. industrial competitiveness in the civil sector -- but only if we take these actions with a dual-use objective explicitly in mind. For example, if, in developing advanced, defense display systems, we do not use specialized military specifications, unique DoD standards, etc.; but, instead, use commercial components, commercial specifications and standards, and -- most important -- commercial buying practices.

Obviously, the nation's overall competitiveness problems cannot be solved solely by addressing the defense industry -- but it is a place to start; and no one can argue that the government does not have a role there. Whether it is the above-noted four-part set of long-term actions, or some others, it is clearly time to recognize the changing international economic and geopolitical environment and to begin to take action. To quote again from Secretary Cheney's September 1989 report ("Soviet Military Power: Prospects for Change"):

> "If the United States proves unable to compete effectively in areas of advanced technologies, it would incur the most severe economic and security consequences: markets would be lost, the U.S. industrial base would erode, and the United States would become increasingly dependent upon offshore technologies for its defense at the same time as its economic health weakens. It is somewhat ironic that, although the Soviet Union constitutes the greatest threat to U.S. security, the greatest challenge to the U.S. technology and industrial base will almost certainly come from the United States' own allies. Thus the United States must succeed in this "friendly competition" with advanced Western industrial states if its economic power, and the West's system of collective security, is to endure."

Recently, Senator John McCain raised a critical question when he stated: "As it becomes recognized that the U.S. government is significantly involved in the issue of national competitiveness, who is going to take the responsibility?" Today there is -- unfortunately -- no obvious answer. It is clear, however, that the answer must go well beyond the establishment and implementation of a "defense industrial strategy". Yet, the

latter must fit into this overall picture and it can be an essential first step.

The achievement of a "vision" for the future defense industrial base (such as that described above) will clearly take many years -- and will require continuous leadership. It will also require many incremental -- yet consistent -- actions. I believe that much of what is proposed in Senator Alan Dixon's bill on the Defense Production Act (S 1379) is a move in the right direction. In the attachment I have commented on specific sections of this important bill and suggested some changes which could help in more rapidly achieving the desired strengthening and civil/military integration of the nation's industrial base.

In summary, this hearing -- and the proposed resultant legislation -- can be important steps in achieving the needed changes that the nation must undertake to reverse the disastrous dual trends of a deteriorating defense industrial base and of a declining U.S. industrial competitiveness. The Committee is to be commended for its initiative. Our future military and economic security depend upon the continuation of such steps.

Attachment

SPECIFIC COMMENTS ON S 1379

TITLE I -- Which covers Title III and VI of the Defense production Act -- and which is designed to expand the authorities of the President to take actions to expand productive capacity and supply by:

- Expanding the projects eligible for loans, loan guarantees, guarantees, purchase guarantees and grants;
- Establishing a special revolving fund to enhance the utility of this program;
- Increasing the threshold for Congressional authorization of individual projects;
- Increasing the oversight of offset agreements and requiring the reporting of each agreement above a specified amount;
- Establishing new antitrust immunities and authorizing the establishment of "sanctioned industry consortia" to provide industrial resources and technologies for the enhancement of the industrial base supporting national defense.

Overall, I found Title I's focus on bolstering U.S. competitiveness a distinct improvement over other, more protectionist, approaches. However, a few suggestions which I would make are:

- "Two thresholds are specified in the proposed bill: $5 million for reporting offsets (Section 114), and $50 million for Congressional authorization of individual projects (Section 111, covering loan guarantees, loans, purchases, and purchase commitments -- all aimed at strengthening "industrial resources" and "critical technologies"). I would strongly urge that no amounts be specified in the legislation but that the President be instructed to set the amounts from time to time and clear them with the appropriate Congressional Committees. This flexibility should assure much sounder management (the levels currently indicated are far too low for cost-effective implementation).

- The proposed broadening of the DPA Title III focus is extremely important. The DoD has identified this program as a key element of its strategy to bolster industrial competitiveness; you need to ensure that the program lives up to its promise. To do so, it is essential that stable long-term funding be provided in the Act. Additionally, the provision for a revolving fund to provide stable financing for advanced manufacturing technology and processes, and the possible use of Title III provisions for guaranteed initial purchases of future products, could prove very useful as an incentive that complements other, selected, "critical technology investment" efforts. Finally, in carrying out your oversight responsibilities you should ensure that the program is "on top" of emerging technologies and competitiveness needs.

- I'm intrigued by your proposed amendments to Section 708 (50 USC app. 2061). I strongly support the move to broaden the existing authorities for industry consortia. Although these are not panaceas, they can be effective if well managed. A report of several years ago for FEMA pointed out the potential to use existing Section 708 authorities for these purposes; your amendments would clarify this intent further.

TITLE II -- Covers a number of additional provisions to improve industrial preparedness:

- Establishing an Industrial Capabilities Committee within the Executive Office of the President;

- Improving integration of national security policy and national economic policy;

- Assessment of industrial base capabilities through periodic exercises to simulate mobilization conditions;

- Issue acquisition policies to encourage investment in advanced manufacturing technology, production equipment and processes; to provide additional opportunities to support firms that are developing critical defense technologies or that are sources for critical items;

- Encourage the use of domestic subcontractors in the performance of contracts related to national defense requirements;

- Provide for application of evaluation factors to counter any price advantage enjoyed by a nondomestic contractor;

- Determine a firm's ineligibility for award when it has engaged in activities specified as "unfair trade practices".

The overall emphasis of Title II is extremely important -- linking "industrial capability and national security" and "encouraging improvement of the industrial base", especially _if_ the actions are focused on explicit support for "critical defense technologies" (both product and process technologies). I'd offer several suggestions to further strengthen this excellent cluster of improvements:

- Consider specifying that the Industrial Capabilities Committee be composed of the Under Secretary of Defense (Acquisition), the Administrator Office of Federal Procurement Policy, the Deputy Secretary of Commerce, and the Director of FEMA, plus others as determined by the President; and that the Committee be responsible for the development of all policies and programs covered in S 1379.

- Emphasize communications with Industry and Congress in planning the industrial base structure.

- **Add to Part A of Title II an encouragement of changes in legislation and regulation that would create incentives for firms to integrate their civil and military operations at the plant level.**

- **Limit Section 214 "Procurement of Critical Items of Supply" to those few technologies specifically identified as "essential to maintain domestic sources"**

- **Remove provisions such as contained in Section 214b -- "domestic percentages of total subcontracting" -- as being protectionist without achieving the required objective; and replace with more specific wording regarding "critical technologies" only.**

- **Finally, unless I misread Section 222, it would create considerable added opportunity for potential abuse of suspension and debarment of defense contractors, by introducing a whole new set of government agencies into this arena -- which I certainly would not want to encourage.**

The **Chairman**. Let me thank you for a really excellent presentation and your longer statement which you've summarized contains a number of very important points and we appreciate that effort and will give them very careful consideration.

Senator Cranston has asked to be recognized at this point.

Senator **Cranston**. I thank you, Mr. Gansler, for that very interesting testimony and I'm sorry I won't hear Mr. Marsh and Mr. Math. I want to say to Bernard Schwartz, I've read your testimony since I won't be able to listen to it directly, and I want to say I agree with a great many of your recommendations, particularly those on page 4 relating to capital gains and a suggested roll-over which is a concept I've been advocating in a slightly different sense for a long time. I'm a bit of a renegade among some Democrats in that I favor a capital gains change. What you have to say about the need for other tax incentives to produce low-cost capital and to encourage long-term investment, and antitrust. I am very concerned about the point you make about the penetration of defense industries by foreigners. In fact, we don't know what's happening on that front. We certainly should make available the resources to learn.

One other point that stood out in your statement to me was the suggestion to encourage research and dual-use technology. At a time when there are going to be some significant cutbacks in the course of time in military spending in view of the collapse of the Warsaw Pact and the changed role of the Soviet Union under Gorbachev, reconversion or conversion becomes an issue and dual-use approaches would be a very, very sound aspect of what we should be doing and I appreciate your comments on that point.

I'm sorry I have to leave at this stage. Thank you.

The **Chairman**. Thank you, Senator Cranston.

I would just say one other thing with respect to this. These two caucuses that have been called on an emergency basis or a real time basis at 10:30, the clean air legislation has so many elements to it that it impacts each region of the country in different ways and so everyone has an important stake in that, including this senator, but I am well represented by my junior colleague who is there on my behalf as well as his own and our State's behalf. So we're going to continue on here this morning and I hope that other members will be able to return. I know there is a strong intent to if they are able to, depending on the length of this other meeting.

Mr. Schwartz, let us hear from you. Why don't you identify yourself and then we'll move ahead.

STATEMENT OF BERNARD L. SCHWARTZ, CHAIRMAN AND CEO, LORAL CORP., NEW YORK, NY; MEMBER, DEPARTMENT OF DEFENSE'S POLICY ADVISORY COMMITTEE ON TRADE AND THE DEFENSE MANUFACTURING BOARD

Mr. **Schwartz**. Thank you, Mr. Chairman. I am Bernard Schwartz, chairman and chief executive officer of Loral Corp.

I welcome the opportunity to appear before you on this very important subject.

In response to your questions and in the general context of this hearing, I want to express my support for the reauthorization of the Defense Production Act, and to reiterate my continuing concern about the decline of our defense industrial base.

Until very recently, relatively little public attention has been paid to this issue because the erosion has been slow and largely invisible. Yet, the number of defense suppliers is shrinking rapidly, particularly at the subcontractor level, which I am particularly concerned about. Many prime contractors also are incurring crippling losses as a result of program cancellations, postponements, and overruns on fixed-price development contracts. Foreigners are buying our high-tech companies at an alarming rate. Advanced manufacturing technology is being ignored, and industry-government relations remain largely antagonistic.

All of these factors have combined to weaken the U.S. technology base and therefore threaten the U.S. technology advantage which forms the basis of our entire defense strategy. And all of these developments promise to become more serious in an era of declining defense budgets.

To preserve and reinvigorate the U.S. defense industrial base, we need two seemingly simple things—a set of economic incentives that encourage private sector investment in defense technologies—and I agree with the Senator's prior comments with respect to the emphasis on private sector—and second, efforts of the executive branch to intervene very selectively when market forces contradict our national security interests.

Government has a vital role in promoting the health of the industrial base, but let me state very clearly that I am opposed to government bailouts of faltering defense enterprises and would be troubled by massive government loans and grants. Government money is the easy answer but not necessarily, here, the right answer.

The U.S. Government can take several steps to ensure that the U.S. defense industrial base remains healthy by vigorously representing the United States best interests in international dealings. The Federal Government should involve defense contractors more effectively in the MOU process. In the negotiation of the FSX deal with Japan, for example, the primes were virtually the only American contractors consulted by the Government. This resulted in, among other things, an exclusion of U.S. firms' participation in the avionics portion of the FSX airplane. This represents the loss of potentially billions of dollars of new business for U.S. avionics houses. This is both bad policy and bad business. In the current negotiations with Korea about its new fighter, the Government should involve a range of U.S. defense companies, especially subtier contractors, as it negotiates this huge international cooperative venture.

Along the same lines, the U.S. Government should vigorously resist international consortiums whose agreements are written to specifically exclude U.S. participation. On the European fighter, for example, the U.S. defense firms cannot bid for many key systems because of the export requirements of the consortium. These requirements were created more to exclude U.S. participation than to promote the EFA's exportability.

The U.S. Government should also make changes in U.S. tax and antitrust laws that now actively discourage private investment in the defense industrial base. A most important change would be to foster the availability of low cost capital by indexing the capital gains tax to eliminate the inflation tax on capital, and creating special tax benefits for equity investors in emerging high-tech companies by deferring capital gains taxes on those investments if the proceeds are rolled over into equity investments in similar high-tech companies. This would in effect encourage venture capital in new emerging companies. We should shorten depreciation schedules for high-tech capital equipment and exempt certain high-tech consortiums from antitrust regulations. We should also make R&D tax credits permanent.

In order to promote investment support for high-tech, defense-related emerging companies, Congress could create a Defense Reconstruction Corporation, which, armed with capital and Federal Government guarantees, could invest equity and loans in undercapitalized technology companies. By using an independent corporation, we would be able to maintain entrepreneurialism and the spirit of capital without generating large government involvement and cumbersome government structure. In this way, we could have a structure that would be an incentive to investment, provide capital at low cost, and preserve capital and entrepreneurial spirit.

In international competition U.S. defense companies face special unfair burdens that can be alleviated by government help. To counter foreign government marketing and financing support to its defense contractors in the form of low interest financing, U.S. could match these grants or financial credits to overseas buyers of U.S. defense products. It is very difficult, particularly for U.S. company defense manufacturers who are trying to sell to other countries and are competing with low cost loans from France and England and the governments of our competitors.

Another example is offset credits demanded of U.S. producers by foreign countries. The United States should impose reciprocal offset requirements in such cases.

Even as mundane a suggestion as U.S. Government marketing involvement is desirable. Look at the remarkable effort made by the United Kingdom Government, including the Prime Minister's personal direct involvement, in its successful attempt to sell the Tornado airplane in Saudi Arabia.

The Government needs to systematically collect and analyze data related to foreign ownership and foreign dependency. It is one of the most astounding facts of the computer age that the U.S. Government does not know the extent of foreign penetration in our defense marketplace and the degree to which we depend on foreign suppliers for key materials. While the Departments of Commerce, Defense, State, and Treasury compile data on foreign investments for specific purposes, these data are neither systematically nor comprehensively analyzed or available for information.

The risk of this continuing self-imposed ignorance is no less than the loss of our technological leadership, the further erosion of our industrial base, and a potential threat to our security in time of crisis. To take one specific example, the United States today is dependent on foreign components or assembly for some key U.S. tactical missile systems and the list is growing daily. In fact, I would not be surprised if the United States has foreign owned or produced components in all of our defense arsenal. What happens when, not if, these supplies are cut off? The answer is, at best, frightening.

A sound collection, analysis and reporting system is only a start. What is of critical importance is alerting senior government leaders to the threat to security interests posed by foreign ownership and foreign dependency, and demanding prompt action. Accordingly, I believe that the Exon-Florio legislation is of positive importance. The President's recent intervention in ordering the China National Aero-Technology Import and Export Corporation to sell its interest in Mamco Manufacturing Co., a Seattle-based producer of aircraft parts for Boeing, demonstrates that the Exon-Florio legislation is sufficient to protect our national security interest, and no addition legislation is needed. Active congressional interest in such foreign acquisitions of U.S. defense companies will alert the national security bureaucracy and ensure close executive scrutiny of such acquisitions in the future.

The DOD should also change some of its contracting regulations to encourage investment in research and development.

Currently there is a series of financial disincentives peculiar to the defense industry that, if abolished, would dramatically increase the attractiveness of private investment in leading-edge defense technology. For example, there is currently a proposal that would not allow defense companies to recover the fair market value paid for valuable defense assets in an acquisition. This is a powerful poison pill for any potential U.S. purchaser of a U.S. defense company. It is a disincentive to the accommodation and reformation within the defense industry today. This proposed ruling may well result in an even bigger sell-off of our defense industrial base to foreign interests.

Additionally, the DOD only allows a portion of contractor's own investment in research and development, and the interest expense associated with that investment, as a recoverable cost. If 100 percent of all defense R&D could be recovered, I am sure you would see a marked increase in this kind of investment by defense contractors.

Defense companies have been saddled with a seemingly endless parade of contracting rulings that, taken together, make the defense business increasingly unattractive and unprofitable. Defense companies that are financially strong and see a profitable future in the defense industry will continue to allocate scarce capital resources to research. Those who do not see it as a profitable venture will not do so. As DOD resources for research become scarcer, this country cannot afford to discourage private sector investments as we do now.

Recently, Donald Atwood, Deputy Secretary of Defense, took an important step in the right direction when he announced that the DOD is reviewing its policies on incentives to defense contractors to upgrade their manufacturing plants and on progress payments to offer contractors a more equitable return on their investment. Much more needs to be done, but I hope Secretary Atwood's recommendations come to fruition.

A second approach is to encourage more research in dual-use technology. From a project's inception, a company would anticipate potential for both military and commercial sales. Now commercialization is typically considered only after a defense product is completed, and success stories are few and far between. If commercial uses were incorporated at the beginning of a research project, there would be added incentives for companies to invest in new ventures.

At present, some of us in industry are looking at exactly how this might be done. Such investments would be more attractive if all rights for the commercial exploitation of a dual-use product are granted to the company that developed such a product, even if the research was partially funded with government money.

Today, Senator, the way it works, if the government helps pay or does pay for research, it has the rights to whatever commercial applications might be used, and companies are reluctant in a very competitive commercial marketplace to allow that freeing up of their proprietary efforts and I think some help here could be useful.

Government and industry urgently must devise new incentives if we are to generate healthy levels of defense R&D and, correspondingly, maintain U.S. technological superiority. I am increasingly convinced that if we cannot generate more relatively low-cost capital for investment in this country, our industrial base, both defense and commercial, will decline, no matter what other measures we adopt. Other tax incentives and changes in antitrust laws to encourage long-term investments in emerging defense technologies, and procurement reform to reverse the increasingly destructive relationship between industry and government will make significant headway in rebuilding our defense industrial base. I am confident we can correct this situation and recapture our momentum as the world's defense technology leader.

This concludes my prepared statement. I would be happy to answer any questions that you might have.

[The complete prepared statement of Bernard L. Schwartz follows.]

STATEMENT OF

BERNARD L. SCHWARTZ

CHAIRMAN AND CHIEF EXECUTIVE OFFICER

LORAL CORPORATION

BEFORE THE

COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS

UNITED STATES SENATE

MARCH 1, 1990

Mr. Chairman and members of this distinguished committee, I am Bernard Schwartz, Chairman and Chief Executive Officer of Loral Corporation.

I welcome the opportunity to appear before you today to discuss the reauthorization of the Defense Production Act of 1950 and S. 1379, the "Defense Production Act Amendments of 1989." In recent years, I have become increasingly concerned about the erosion of our defense industrial base in my capacity at Loral and also as a member of both the Defense Policy Advisory Committee on Trade and the Defense Manufacturing Board's Subgroup on Foreign Ownership. I want to emphasize at the outset, that the views which I present today are my own and do not necessarily represent those of any organization.

In response to your questions and in the general context of this hearing, I want to express my support for the reauthorization of the Defense Production Act, and to reiterate my continuing concern about the decline of our defense industrial base.

Until very recently, relatively little public attention has been paid to this issue because the erosion has been slow and largely invisible. Yet, the number of defense suppliers is shrinking rapidly, particularly at the subcontractor level, and many prime contractors are incurring crippling losses as a result of program cancellations, postponements, and overruns on fixed-price development contracts. Foreigners are buying our high-tech companies at an alarming rate. Advanced manufacturing technology is being ignored, and industry-government relations remain largely antagonistic.

All of these factors have combined to weaken the U.S. technology base, and therefore threaten the U.S. technology advantage, which forms the basis of our entire defense strategy. And, all of these developments promise to become more serious in an era of declining defense budgets.

To preserve and reinvigorate the U.S. defense industrial base, we need two seemingly simple things -- a set of economic incentives that encourage private sector investment in defense technologies, and efforts of the Executive Branch to intervene very selectively when market forces contradict our national security interests.

Government has a vital role in promoting the health of the industrial base, but let me state very clearly that I am opposed to government bailouts of faltering defense enterprises and would be troubled by massive government loans and grants. Government money is the easy answer, but rarely the right answer.

The U.S. Government can take several steps to ensure that the U.S. defense industrial base remains healthy by vigorously representing the U.S.'s best interests in international dealings. The Federal Government should involve defense contractors more effectively in the MOU process. In the negotiation of the FSX deal with Japan, for example, the prime was virtually the only American contractor consulted by the U.S. government. This resulted in, among other things, an exclusion of U.S. firms' participation in the FSX avionics. This represents the loss of potentially billions of dollars of new business for U.S. avionics houses and the lost opportunity to participate in the development of next generation technology. This is both bad policy and bad business. In the current negotiations with Korea about its new fighter, the government should involve a range of U.S. defense companies, especially subtier contractors, as it negotiates this huge international cooperative venture.

Along the sames lines, the U.S. government should vigorously resist international consortiums whose agreements are written to specifically exclude U.S. participation. On the European fighter, for example, U.S. defense firms cannot bid for many key systems because of the export requirements of the consortium. These requirements were created more to exclude U.S. participation than to promote the EFA's exportability.

The U.S. Government should also make changes in U.S. tax and antitrust laws that now actively discourage private investment in the defense industrial base. The single most important change would be to foster the availability of low cost capital by indexing the capital gains tax to eliminate the inflation tax on capital, and creating special tax benefits for equity investors in emerging high-tech companies by deferring capital gains taxes on those investments if the proceeds are rolled over into equity investments in similar high-tech companies. We should shorten depreciation schedules for high-tech capital equipment and exempt certain high-tech consortiums from antitrust regulations. We should also make R&D tax credits permanent.

The government needs to systematically collect and analyze data related to foreign ownership and foreign dependency. It is one of the most astounding facts of the computer age that the U.S. government does not know the extent of foreign penetration in our defense marketplace and the degree to which we depend on foreign suppliers for key materials. While the departments of Commerce, Defense, State and Treasury compile data on foreign investments for specific purposes, these data are neither systematic nor comprehensive. I support the resources necessary to improve our information.

The risk of this continuing self-imposed ignorance is no less than the loss of our technological leadership, the further erosion of our industrial base, and a potential threat to our security in time of crisis. To take one specific example, the United States today is dependent on foreign components or assembly for some key U.S. tactical missile systems and the list is growing yearly. In fact, I would not be surprised if the U.S. has foreign owned or produced components in all of our defense arsenal. What happens when (not if) these supplies are cut off? The answer is, at best, frightening.

A sound collection, analysis and reporting system is only a start. What is of critical importance is alerting senior government leaders to the threat to security interests posed by foreign ownership and foreign dependency, and demanding prompt action. Accordingly, I believe that the Exon-Florio legislation is of great importance. The President's recent intervention in ordering the China National Aero-Technology Import and Export Corporation (CATIC) to sell its interest in Mamco Manufacturing Company, a Seattle-based producer of aircraft parts for Boeing, demonstrates that the Exon-Florio legislation is sufficient to protect our national security interests, and no additional legislation is needed. Active Congressional interest in such foreign acquisitions of U.S. defense companies will alert the national security bureaucracy and ensure close Executive scrutiny of such acquisitions in the future.

The DOD should also change some of its contracting regulations to encourage investment in research and development.

Currently there is a series of financial disincentives peculiar to the defense industry that, if abolished, would dramatically increase the attractiveness of private investment in leading-edge defense technology. For example, there is currently a proposal that would not allow defense companies to recover the fair market value paid for valuable defense assets in an acquisition -- a powerful poison pill for any potential U.S. purchaser of a U.S. defense company. This proposed ruling may well result in an even bigger sell-off of our defense industrial base to foreign interests.

Additionally, the DOD only allows a portion of a contractor's own investment in research and development, and the interest expense associated with that investment, as a recoverable cost. If 100 percent of all defense R&D could be recovered, I am sure you would see a marked increase in R&D investments by defense contractors.

Defense companies have been saddled with a seemingly endless parade of contracting rulings that, taken together, make the defense business increasingly unattractive and unprofitable. Defense companies that are financially strong and see a profitable future in the defense industry will continue to allocate scarce capital resources to research. Those who do not, will not. As DOD resources for research become scarcer, this country cannot afford to discourage private sector investments as we do now.

Recently, Donald Atwood, Deputy Secretary of Defense, took an important step in the right direction when he announced that the DOD is reviewing its policies on incentives to defense contractors to upgrade their manufacturing plants and on progress payments to offer contractors a more equitable return on their investment. Much more needs to be done, but I hope Secretary Atwood's recommendations come to fruition.

A second approach is to encourage more research in dual-use technology. From a project's inception, a company would anticipate potential for both military and commercial sales. Now, commercialization is typically considered only after a defense product is completed, and success stories are few and far between. If commercial uses were incorporated at the beginning of a research project, there would be added incentives for companies to invest in new ventures.

At present, some of us in industry are looking at exactly how this might be done. Such investments would be more attractive if all rights for the commercial exploitation of a dual-use product are granted to the company that developed such a product, even if the research was partially funded with government money.

Government and industry urgently must devise new incentives if we are to generate healthy levels of defense R&D and, correspondingly, maintain U.S. technological superiority. I am increasingly convinced that if we can not generate more relatively low-cost capital for investment in this country, our industrial base-- both defense and commercial -- will decline, no matter what other measures we adopt. Other tax incentives and changes in antitrust laws to encourage long-term investments in emerging defense technologies, and procurement reform to reverse the increasingly destructive relationship between industry and government will make significant headway in rebuilding our defense industrial base. I am confident we can correct this situation and recapture our momentum as the world's defense technology leader.

That concludes my prepared statement. I appreciate your giving me the opportunity to share these thoughts with you today and would be happy to answer any questions that you might have.

The CHAIRMAN. Thank you for an excellent and detailed assessment and we'll get into questions about part of it after we've heard from all of our witnesses.

Next we're going to hear from Gen. Robert Marsh, retired, who is Chairman of the Science and Technology Committee for the Air Force Association and is also presently chairman of the board of Thiokol Corp.

STATEMENT OF ROBERT T. MARSH, U.S. AIR FORCE, RETIRED, CHAIRMAN, SCIENCE AND TECHNOLOGY COMMITTEE, AIR FORCE ASSOCIATION, ARLINGTON, VA; CHAIRMAN OF THE BOARD, THIOKOL CORP.

General MARSH. Thank you, Mr. Chairman.

I am pleased to be here and to express some concerns of mine. I'd like to summarize, the statement I've submitted for the record.

I know it won't surprise you or this committee that, as I have observed, the trends in the industrial base are not good. The decline is widely recognized and it's been extensively documented. I'd like to mention that the Air Force Association report "Lifeline in Danger" made a significant contribution in this respect. The picture is not bright.

Moreover, I believe attention to the defense industrial base is an even more urgent matter today as the defense business with industry declines. Even during the buildup of the 1980's, the total number of contractors, as you well know, engaged in the defense business went down significantly. As the defense business then shrinks further, the maintenance of a viable defense industrial base to support future weapon needs and mobilization requirements becomes even more problematical. As you've recognized the defense industrial base problems are just a subset of the broader national industrial base challenges we face.

Clearly, the effort to reverse the decline of the industrial base must be comprehensive in scope. In general, of course, the Government needs to pursue policies that foster innovation and competitiveness. Tax, trade and procurement policy all need to be reviewed and revised. The nation's education system needs to be reformed to produce a technically literate workforce in the future.

I believe that one of the most critical contributions of the Government is support to the science and technology base, or the S&T base. During a period of retrenchment in defense, the S&T base requires special attention. If procurements of current systems are shelved or significantly slowed, as they are bound to be, and systems now in varying stages of advanced development are curtailed, then we must pursue, mature and make ready new technology for use when—and I might add, not if—new superior weapon system capabilities are required.

The requirement is really two-fold. Supporting the S&T base with adequate resources and properly focusing the efforts of the S&T program.

Now, the resource problem is critical because the DOD S&T program funding has declined over the past two decades and, with the prospects of further defense cuts looming, the S&T base needs attention now. AFA's Science and Technology Committee recently produced a white paper entitled "The Future At Risk" which I would also like to submit for the record if I could, Mr. Chairman——

The CHAIRMAN. By all means.

General MARSH [continuing]. Detailing many of the problems of the S&T base. I believe there is a compelling case that first claims on part of the so-called peace dividend belong to the pursuit of new technology. This emphasis will not only benefit the defense industrial base but will help pump-prime the private sector as well.

I believe that DOD and the Federal labs generally have done a pretty good job of transitioning technology to the private sector and that ample authority and incentives exist to further expand that effort. I believe we should allow a number of recent initiatives which I mention in my statement to mature before taking additional legislative action.

I would mildly caution against shifting the focus of government laboratories too far toward innovation for direct commercial application. Federal laboratories are not as much constrained by the near-term pressures that afflict industry. Government laboratories are free to explore longer term, high risk technology. If they can mature a given technology to the point where industry is persuaded to pick it up, pursue it further and produce new high technology products, then everyone benefits.

Focusing the R&D effort—deciding where the money goes—is the other significant challenge for the Government. This is the problem of picking and choosing winners and losers. Figuring out which technology is critical and which isn't is inherently very difficult. When government decides, the difficulties are compounded by political as well as technical considerations.

I recommend a broader perspective by focusing instead on critical capabilities or critical sectors. We might as a nation, for example, determine that we want to achieve preeminence in photonics; or develop an SST; or that a single-stage-to-orbit capability, as in the case of the aerospace plane, is essential to maintaining leadership in space flight.

Achieving these, or any number of other national goals which we might choose to support, will provide the United States with the capability it needs to stay at the forefront of advanced technology and will help restore U.S. competitiveness. The process of achieving them will serve to challenge the technical community. Such broad-based goals will provide impetus and direction for Federal labs as well as those of industry and would drive a whole range of technologies, computational and manufacturing, maybe hypersonics, materials and so on. I believe high profile pathfinders have the added benefit of capturing the imagination of the public, industry and our allies; generating interest in the sciences; and encouraging talented people to enter technical fields.

As we address the revitalization of the industrial and technology bases we must focus carefully on the important problem of foreign dependency for materials, components, industrial resources, and technologies that are critical to our defense effort.

The first step in addressing foreign dependency has to be to define the extent of the problem and there is, as acknowledged here today, no system in place to track the source of the resources critical to our weapons systems. A systematic approach to determining the real situation is badly needed, but I believe that at least one approach with such promise is already being explored.

The fiscal year 1989 defense authorization bill required each service to analyze at least one program to determine the availability of materials and industrial resources required for the development, manufacture, operation, and maintenance of that system. I understand that these tests are on track. In practice, the responsibility for tracking the source of critical materials and components falls on the program manager. Computerized data bases, as mentioned, do permit acquisition managers to track many details of a program. I don't see any reason that the system could not track one more significant detail, the source of components and materials. By requiring this of the program manager, the necessary raw data could be accumulated fairly quickly. The analysis, then, of this raw data and determining our true critical dependencies, admittedly a complex task, would probably have to be undertaken centrally somewhere in the Department of Defense.

Well, there are no panaceas in solving the problem of rejuvenating the U.S. industrial and technological base or the matter of foreign dependency, but in a broad context the Defense Production Act plays a very useful role and I do strongly support its extension.

Furthermore, I believe that the specific changes being proposed are for the most part quite helpful. Generally speaking, the amendments strike, in my judgment, the right balance by providing the executive agencies the authority to act without detailing the specific implementation. Nor are the amendments excessively restrictive or protectionist.

The problems we face in nurturing the human and technical resources critical to our national security are real, they are massive, and they are urgent. The committee has done, I believe, a very commendable job in preparing this legislation. It's an important step in the right direction and I would be pleased to work with the committee further.

[The complete prepared statement of Gon. Robert T. Marsh follows:]

Statement of
General Robert T. Marsh, USAF (Ret)

Committee on Banking, Housing
and Urban Affairs

U.S. Senate

March 1, 1990

General Robert T. "Tom" Marsh

General Robert T. Marsh is the Chairman of the Air Force Association Science and Technology Committee. He was named chairman of the board and a director of Thiokol Corporation on July 1, 1989.

Prior to his current appointment, General Marsh was a member of the board of directors for Morton Thiokol, Inc. and served as a consultant to its Aerospace Group. He continues to serve on the boards of several other corporations. He is also a director of the Procurement Round Table and a member of the Board of Visitors of the Software Engineering Institute and the Air Force Institute of Technology.

General Marsh's long and distinguished Air Force career culminated with his assignment as Commander of the Air Force Systems Command in 1981. Prior to that, he held a number of senior positions in Systems Command, including Commander of Electronic Systems Division, Vice Commander of the Air Force Systems Command, Deputy Chief of Staff for Development Plans, and Deputy Chief of Staff for Systems.

General Marsh is a graduate of the United States Military Academy, the Air Tactical School, the Air Command and Staff College, and the Air War College. He is married to the former Joan Spears of Crawfordsville, Indiana. They are the parents of three married daughters.

There is nothing startling in the pronouncement that trends in the defense industrial base are not good. Industries are abandoning the defense business. US industry generally has not paid sufficient attention to modernization and as a result its competitiveness has declined. Foreign penetration of US markets and offsets have damaged domestic industries critical to national security and expanded US dependence on foreign sources for the products of these industries. The Air Force Association produced a major study of many of these problems in 1988 entitled "Lifeline in Danger: An Assessment of the US Defense Industrial Base." Many others have also documented these difficulties. Because of the good work of Senator Dixon and many others, I know the committee is aware of the content of these reports. The picture is not bright.

Moreover, attention to the defense industrial base is an even more urgent requirement now that defense business with industry is declining. Even as the vigorous acquisition effort of the 1980s expanded the market and supported the defense industry, the total number of contractors engaged in defense work went down significantly. As defense business slows, maintenance of a viable defense industrial base to support future weapons needs and mobilization requirements becomes even more problematic.

Nor can protection of the defense industrial base be divorced from broader industrial base issues. Competitiveness and economic vitality are also critical to national security, and every important technology we cede to foreign competition weakens us, to a greater or lesser degree.

Clearly the effort to reverse the decline of the industrial base must be comprehensive in scope. Government and industry both need to get their respective houses in order. Government needs to reexamine the total field of incentives and disincentives it provides to industry as a whole and to the defense industry specifically. Tax and trade policy need to be reviewed and reassessed. Our educational system desparately needs to be strengthened if we are to correct the deficiencies in our technical work force. The vast number of laws, regulations, and requirements imposed on the defense industry often discourage the modernization so obviously needed. Frequent revision and fluctuating budget levels inhibit the long term planning needed to achieve that modernization. Industry, for its part, in the face of unprecedented challenges from overseas competition, must acknowledge that a short-term outlook is self-defeating and that quality is the key to success.

Certainly the government must play an active role in minimizing foreign dependencies and promoting the US industrial base. In general, the government needs to pursue policies that foster innovation and competitiveness in industry. The Defense Production Act and the amendments of it that we are discussing today are, I believe, helpful in this regard.

I would also argue that among the most critical contributions the government makes is support of the science and technology base (S&T base). And during a period of retrenchment in defense, the S&T base requires special attention. If procurements of current systems are shelved or significantly slowed, and systems now in varying stages of advanced development are curtailed, then we must pursue, mature and make ready new technology for use when new superior weapon system capabilities are required.

The requirement is two-fold: supporting the S&T base with adequate resources, and focusing the efforts of the S&T base program. The resource problem is particularly critical because the DoD S&T base program has not fared well over the past two decades. Since the mid 1960s, DoD funding for basic research and exploratory development programs has declined about 40 percent measured in constant dollars. Faulty personnel policies have discouraged talented scientists and engineers from entering and staying in the government R&D community. Facilities are aging. Lack of farsighted leadership, difficulty in transitioning laboratory technology to the field, micromanagement of the S&T base program by those outside the laboratories, and the lack of appropriate incentives for industry to pursue an aggressive independent research and development (IR&D) program all frustrate and delay needed innovation.

We need to play a game of catch up at precisely the time that the S&T base program will be competing with other high priority defense programs for increasingly scarce dollars. I believe there is a compelling case that first claims on part of the so-called "peace dividend" belong to the development of new technology.

This emphasis will not only pay big dividends for the defense industrial base, but will help pump prime the private sector as well. A substantial list of advanced technologies in wide use today was explored and developed by the Department of Defense--computers, jet engines, lasers, infrared technologies, to name just a few. There is a natural diffusion to the private sector of technology developed by the military. The military contracts much of its research to universities and private laboratories. It indirectly provides funds (though arguably insufficient) to private industry to pursue independent research and development. Utilization of these new technologies is not restricted to the military.

Further, recent legislation provides ample authority to encourage even greater technology transfer from federal laboratories to the private sector. Small businesses and universities have the right to patents for technology developed with government funds. Companies can obtain rights to inventions resulting from Cooperative Research and Development Agreements with federal labs. Federal employees can get fifteen percent of the royalties generated by the licensing of their patented inventions;

DoD permits inventors twenty percent of the royalties. Everyone--labs, businesses, government scientists and engineers--it seems to me, has the authority needed and the right incentives to promote this kind of technology transfer.

Of course, there is always room for improvement. Only five percent of government patents are developed into commercial products. On this score I would caution some patience, since much of the legislation guiding this transfer is fairly recent. I believe we should allow these new intitiatives to mature before taking additional legislative action.

I would also mildly caution against shifting the focus of laboratories too far toward innovation for direct commercial application. One of the criticisms of private industry is that its short term focus discourages risk to the extent of impeding significant innovations. Industry IR&D forced to produce a commercially viable product in three to five years is necessarily short-sighted.

Risk of failure in IR&D projects must be accepted, but that risk points to the difficulty, at the level of basic research and exploratory development, of picking winners and losers. No one can be sure where the next breakthrough will come, which avenues of exploration will pan out and which will fizzle.

These factors offer a fairly natural division of labor between the laboratories and industry. Federal laboratories are not as constrained by near term pressures. They can afford to look at longer term and higher risk technologies. If the laboratories can mature a technology to the point where industry is persuaded to pick it up, pursue it further, and produce new high technology products, everyone benefits. Without suggesting that we can ignore the government disincentives that lead to industry's lamentable short-term focus, federal laboratories might be able to offset some of that shortsightedness.

Focusing the R&D effort--deciding where the money goes--is the other significant challenge for the government. This is another part of the problem of picking winners and losers. Figuring out which technology is critical and which isn't is inherently difficult. When government decides, the difficulties are compounded by political as well as technical considerations. I recommend a broader perspective by focusing instead on critical capabilities or critical sectors. This context, I believe, might provide the most meaningful long-term framework in which to try to define critical technologies.

We might as a nation, for example, determine that we want to achieve preeminence or maintain it in any number of critical capabilities or sectors: microelectronics, hypersonics, photonics, software, biotechnology, manned exploration of the solar system, single-stage-to-orbit, and a supersonic transport all come to mind. Achieving these (or other) goals will provide the US with the capabilities it needs to stay at the forefront of advanced technology and will help restore US competitiveness. The process of achieving them will serve to energize the technical community. Such broad based goals would provide impetus and direction for both federal labs and other R&D centers, and would drive a whole range of enabling technologies--materials, propulsion, computing, manufacturing, and so on. Such a focus provides local managers vital flexibility. At the same time, these high profile pathfinders have the added benefit of capturing the imagination of the public, industry, and our allies; generating interest in the sciences; and encouraging talented people to enter technical fields.

As we address the revitalization of the industrial and technology bases, we must focus carefully on the important problem of foreign dependency for materials, industrial resources, and technologies critical to our defense effort.

The first step in addressing foreign dependency has to be to define the extent of the problem. There is no system in place today to track the source of the resources critical to our weapons systems. A systematic approach to determining the real situation is needed badly. I believe that one approach with such promise is already being explored.

The fiscal year 1989 defense authorization bill required that each service analyze at least one program to determine the availability of materials and industrial resources required for development, manufacture, operation and maintenance of that system. I understand these tests are on track. In practice, the responsibility for tracking the source of critical materials and components falls on the program manager. Computerized data bases permit acquisition managers to track many of the details of a program and I don't see any reason that the system could not track one more critical detail, the source of components and materials, with reasonable precision. By placing the responsibility with the program manager, the necessary raw data could be accumulated fairly quickly.

The analysis of this raw data will be a complex task and would probably have to be undertaken centrally in the Department of Defense. Ideally, the US would be completely independent from foreign sources for all militarily significant materials and resources, because domestic sources are inherently more secure. Unfortunately, that solution is impractical and prohibitively expensive. To determine the really critical dependencies, however, a number of factors must be considered. The vulnerability of the nation's economy and the defense industry to an interruption of supply is one important consideration. There are a number of ways to mitigate the dangers of dependency, such as stockpiling. The political stability and reliability of the source is another important factor. The US relies on allies for its security, and we have good reason to believe that many of those sources are reasonably secure. Whether the source can be protected even in an emergency must also be considered. The US has long been dependent on overseas resources--oil and platinum group metals, for example--and the nation has taken appropriate steps to assure continued availability of those resources even when challenged. Such considerations will permit a focused and discriminate application of some of the amendments under discussion today.

There are no panaceas in solving either the broad problem of rejuvenating the US industrial and technology base or the specific one of foreign dependencies. But in the larger context, the Defense Production Act plays a very useful role and I strongly support its extension. The Act already provides authority for the President to expand or expedite production of critical materials and defense related products through prioritizing defense orders, loans, grants, loan guarantees and purchase agreements, as well as a range of other information gathering and coordination powers. All of these are important.

Furthermore, I believe that the specific changes proposed in the DPA Amendments of 1989 are for the most part quite helpful. Generally, the amendments strike the right balance by providing the executive agencies with the authority to act without specifying detailed implementation. The difficulty of determining critical technologies remains, but assurance of a domestic source in these cases makes these amendments very important.

Nor do these amendments impose prohibitively expensive and ultimately unworkable requirements on the Department of Defense in terms of where and how the Department must buy its goods and services. By avoiding these extremes, this measure is superior to some recently proposed alternatives that have a distinct protectionist flavor.

In terms of the specific provisions of this act, I would offer the following observations:

Section 111 provides a useful expansion of Title III authorities by permitting, at the discretion of the executive agency, the use of loans, grants, loan guarantees, and purchase agreements to promote industrial resources and technology key to defense.

Section 114 requires a report on offset agreements of over $5 million. A reporting requirement achieves the right emphasis, by expressing congressional concern and permitting the scope of the problem to be tracked, while avoiding the more draconian solutions proposed in the past. I do not have a good idea of the "bookkeeping" implications of the $5 million threshold, but intuitively feel that it should be somewhate higher.

Section 125, authorizing the creation of sanctioned industry consortia, promotes what I believe is a good idea. While SEMATECH has its critics, I believe it holds great promise. Other technology areas might benefit from this approach, including superconductivity, hypersonic propulsion, photonics, and possibly even sensor fusion (with broad applications, such as air traffic control, space surveillance, and tactical missiles).

Section 201 creates an Industrial Capabilities Committee, a proposal similar to one offered by the Air Force Association study "Lifeline in Danger". AFA proposed creation of a special "Packard" type commission to set goals and chart a course for industrial recovery. That approach has the advantages of prestige and high visibility, while the approach in this section has the advantage of longevity.

Section 203 reflects another AFA recommendation, the need to exercise and assess the ability of the industrial base to respond to defense emergencies.

Section 211, prescribing an acquisition policy that encourages modernization and **Section 213**, permitting the executive agency to restrict particular competitions to assure at least one domestic source for a critical technology are both appropriate provisions. **Section 212**, however, seems to me to be too specific in terms of prescribing how acquisition managers may go about implementing a policy to encourage industrial modernization. Managers will do a better job if they have flexibility to adapt to varying conditions.

The problems we face in revitalizing our industrial base and nurturing the human and technical resources critical to our national security are real, massive, and urgent. The Committee has done a commendable job in preparing this legislation. It is a step in the right direction. I would be pleased to work with the Committee as it grapples with the very tough broader related issues in the future.

THE FUTURE AT RISK:

The State of the US Science and Technology Program

Executive Summary

The health of the U.S. science and technology base is not good—and it's getting worse. Its condition isn't cause for alarm yet, but it is cause for immediate concern.

The science and technology base is a critical component of U.S. national security. In the past, S&T base programs have generated innovations that kept the U.S. well ahead of its adversaries. But there are many signs that U.S. technological leadership is eroding, including sluggish government funding, a negative trade balance in high technology, and polling data showing that scientists and chief executive officers believe that the U.S. is losing ground in the technical competition.

These problems are best attended to now. The longer the S&T base is allowed to slip, the harder the problems will be to correct. Budget pressures will squeeze U.S. R&D funding, but also make it more important. Limited budgets mean that fewer systems will be acquired. That in turn means that new systems must be ready when older systems need to be retired and that older systems must be upgraded through technology insertion.

The decline in the U.S. S&T program stems from several interrelated causes. These include inadequate investment, lack of farsighted leadership, difficulties in transitioning laboratory technology to the field, aging government R&D facilities, poor retention of scientists and engineers, and pressures that discourage industry from pursuing independent research and development. Each of these difficulties delays or frustrates needed innovation.

These problems need to be addressed, and need to be addressed now. Without action soon, this nation's real strength—the ability of its people to innovate and create—will be undermined. We ignore the warning signs at our own peril.

Prepared by the Air Force Association Science and Technology Committee, Robert T. Marsh, Chairman, Committee Members: Thomas Cooper, Charles Dunzo, Charles Gabriel, David Graham, H. B. Henderson, Victor Reis, Wayne Schroeder, Henry Smyth, Charles Stebbins, and George Weinbrenner;Published by the Air Force Association, 1501 Lee Highway, Arlington, Virginia 22209-1198. September 1989

Introduction

The health and vitality of the nation's science and technology base is critical to its national security. Clear signs of serious trouble in the US S&T base program increasingly suggest that the nation had better pay attention—soon. According to former Air Force Systems Command Commander Gen. Robert T. Marsh, "In earlier years, as we embarked on the design of a new capability, there seemed to be plenty of technology on the shelf. To construct a winning capability, we established key success criteria, and the challenge was to make cost-effective choices between competing technical approaches. In most cases, we were not technology limited. Now we must precede our systems efforts with a prolonged technology maturation phase. Whether we call it 'pre-FSED' (full scale engineering development), or 'risk reduction', or 'demonstration-validation,' or just plain technology maturation, the purpose is the same—to mature the key technologies to a point where we have sufficient confidence to proceed with a reasonably low risk full scale development program. It didn't use to be that way."

The goal of the defense S&T program is basic: to systematically identify and exploit technological advances that can more effectively provide for the defense of the nation. There are times in which advances in key sciences and technologies come together in ways that radically changes the art of warfare. For example, the development of solid rocket fuel, inertial guidance, and thermonuclear warheads led to the corresponding development of intercontinental- and submarine launched- ballistic missiles (ICBMs and SLBMs)—a powerful new military capability. History is replete with examples of the dramatic, sometimes decisive, impact of new technology on the battlefield, ranging from the introduction of the longbow at Cr'ecy to the Stinger in the mountains of Afghanistan. A new generation of technologies including Stealth, high-temperature superconductors, very-high-speed integrated circuits, and fiber-optics—some barely a gleam in the technologists' eye a decade ago—offer tremendous opportunity for greatly enhanced military capability in the not-too-distant future.

Other advances have permitted evolutionary but equally significant improvements in the capabilities of the armed forces. For example, the F-16, introduced in 1979, requires 70 percent fewer maintenance man-hours per flying hour and breaks down 28 percent less than the 1960s vintage F-4. The F-15 engine (the F100-PW-220) requires ten times fewer hot section overhauls than the F-4E engine (the J79). Advances in turbine and materials technologies made these improvements possible. Without them, the the vastly improved readiness of the tactical air forces during the 1980s could not have been realized.

Thus the US is reaping the benefits of wise S&T investments made in the past. But the opportunities afforded by new technologies will be forfeit if adverse trends in the S&T base continue. No one knows for sure where the next breakthroughs will occur. The inherent uncertainties in research and development are great. But clearly, without adequate attention, the capacity of the S&T base program to provide essential incremental improvements and technological breakthroughs will decline significantly.

The trends, unfortunately, are almost universally negative. Funding for basic research and exploratory development has declined dramatically since the early 1960s. Air Force laboratories are aging and equipment needs upgrading. S&T personnel are underpaid. Transitioning laboratory technology to operational systems can be a slow, painful, and expensive process. The Pentagon and Congress engage in disruptive micromanagement of S&T programs. The S&T base program has not had the benefit of strong leadership or advocacy for a decade, and no long-term vision has guided the S&T effort. As a consequence, over the past ten to twenty years, the US lead over the USSR in many military technologies is fading and, equally disturbing, the US technology lead compared to friendly nations has diminished dramatically. Already, the stock of mature technologies available for incorporation in militarily superior systems appears to be diminished.

Reversing the trends and correcting deficiencies in the S&T program will not be easy. Unless corrective measures are pursued, however, the US will be less able to offset Soviet numerical advantages, avoid technological surprise, produce state-of-the-art weapons at affordable cost, and enhance productivity. US security will inevitably suffer as a result.

Signs of Trouble

Judging the ability of the US technology base program to achieve its goals is not an easy exercise. Hard evidence is difficult to formulate because of the lack of clearcut methods of evaluating the potential benefits of basic research or exploratory development. The benefits of any particular project are long term, the risks comparatively great, the possibility of failure substantial. The Commander of Air Force Systems Command, Gen. Bernard P. Randolph, when recently asked the question of how to evaluate the technology base program, cited the modern weapons in the US arsenal as evidence of the successes of past, No one doubts the past successes, but that begs the question of how to go about assessing the health of the technology program today.

A number of trends and figures reveal disturbing signs, however.

Comparative Funding:

Compared to foreign funding of R&D programs, the US seems to come out short. The Soviet Union, by DoD estimates, spent in excess of $60 billion more than the US on military research, development, test and evaluation (RDT&E) from 1970 to 1985. The Soviets have also announced a 20 percent increase in funding to support fundamental research in 1989.(1)

The US spends a lower percentage of its gross national product on research and development than the USSR and Japan and the same percentage as West Germany. US R&D funding has increased at a slower rate than in Japan, France, West Germany, and the United Kingdom over the past 15 years. From 1970 to 1986, for example, overall US R&D grew about three percent par year, while the Japanese annual growth rate was 7.4 percent and West Germany's 4.1 percent.(2) (See charts 1 and 2 on the following page.)

CHART 1

U.S. vs. Soviet Military Research Development, Test & Evaluation

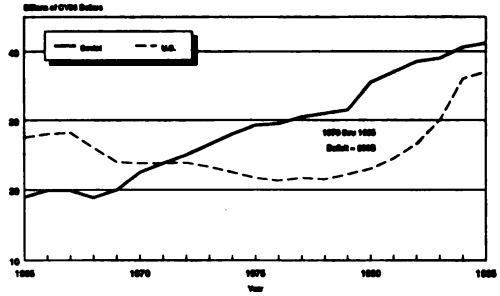
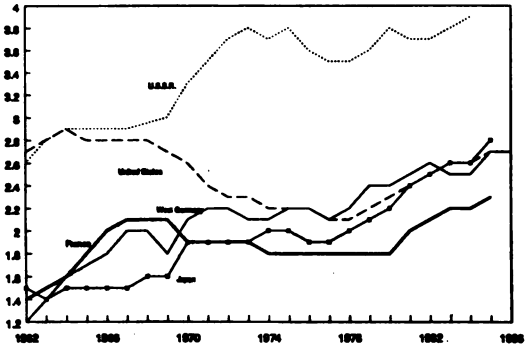


CHART 2

R&D Expendiures in Selected Countries

(As a percent of gross national product)



NOTE: Data for 1984 are preliminary; data for 1985 and 1986 are estimates

CHART 3

Relative U.S./U.S.S.R. Standing in Basic Technology Areas

Basic Technologies	US Superior	US/USSR Equal	USSR Superior
1. Aerodynamics/Fluid Dynamics	●		
2. Computer & Software	●		
3. Conventional Warhead (Including all Chemical Explosives)		▼	
4. Directed Energy		▼	
5. Electro-Optical sensor (Including IR)	▼		
6. Guidance and Navigation	●		
7. Life Sciences (Human Factors, Bio-Technology)	▼		
8. Materials (Lt. Wt. High Strength, High Temperature)	▼		
9. Micro-Electronic Materials & Integrated Circuit Manufacturing	●		
10. Nuclear Warheads		●	
11. Optics		▼	
12. Power Sources (Mobile) (Includes Energy Storage)		●	
13. Production/Manufacturing (Includes Automated Control)	▼		
14. Propulsion (Aerospace and Ground Vehicles)	▼		
15. Radar Sensor	▼		
16. Robotics & Machine Intelligence	●		
17. Signal Processing	●		
18. Signature Reduction	▼		
19. Submarine Detection	▼		
20. Telecommunications (Includes Fiber Optics)	●		

▼ Indicates U.S. position declining compared to Soviet Union in basic technology areas.

Relative U.S./U.S.S.R. Technology Level in Deployed Military Systems

Deployed Systems	US Superior	US/USSR Equal	USSR Superior
Strategic			
ICBMs		●	
SSBNs	●		
SLBMs	▼		
Bombers	▼		
SAMs			●
Ballistic Missile Defense			●
Antisatellite			●
Cruise Missiles		▲	
Tactical			
Land Forces			
SAMs (Including Naval)		▼	
Tanks		▼	
Artillery		●	
Infantry Combat Vehicles		●	
Antitank Guided Missiles		▼	
Attack Helicopters	▼		
Chemical Warfare		▼	
Biological Warfare			●
Air Forces			
Fighter/Attack & Interceptor Aircraft	▼		
Air-to-Air Missiles	▼		
Air-to-Surface Munitions	▼		
Airlift Aircraft	▼		
Naval Forces			
SSNs	▼		
Torpedoes		●	
Sea Based Aircraft	●		
Surface Combatants	▼		
Naval Cruise Missiles		▼	
Mines			●
C^3I			
Communications		●	
Electronic Countermeasure/ECCM	▼		
Early Warning	●		
Surveillance and Reconnaissance	▼		
Training Simulators	●		

▼ Indicates U.S. position declining compared to Soviet Union in key military systems. ▲ Indicates U.S. position improving.

Technology Trends:

A recent Defense Science Board study shows the US superior to the Soviets in 15 of 20 basic technology areas and equal in five. However, the US position is deteriorating in eight of the areas in which it holds an advantage and in three in which it is equal. Out of a list of 31 deployed military systems, the US is superior in 15, equal in 10, and inferior in six. The Soviet Union is gaining ground in fifteen of these systems, the US in only one. (See chart 3.)

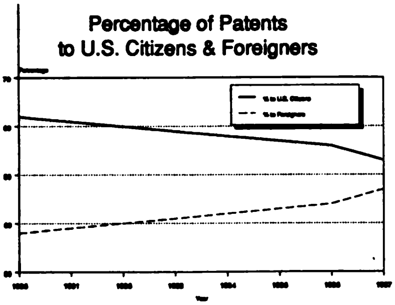
US Share of Foreign Military Sales:

The US share has declined from well over half in the early 1970s to less than a quarter until very recently. In the US, foreign military sales are subject to intense political pressure, but they can be used as a barometer of the health of US S&T base in a couple of ways. The US decline in these sales indicates in part a loss of competitiveness in well-established "moderate" technology systems, possibly due to inattention to manufacturing technology that allows efficient production of such mature systems. Furthermore, the sale of mature systems offsets the development costs of those systems, reduces unit costs, and provides industry a profit margin that allows further R&D investment in next-generation technology.

Patents:

The decline of US dominance in technology is clearly illustrated in patent trends. A greater and greater percentage of US patents are being awarded to residents of foreign countries. The trend is the same in patent applications. (See chart 4.)

CHART 4



Percentage of Patents to U.S. Citizens & Foreigners

High-technology Trade Balance:

The balance of trade in high technology manufactured items, once strongly favorable to the US, is now strongly negative. (See chart 5.)

Polling Data:

Two-thirds of the US industrial chief executive officers recently polled said they believe that the US is losing ground to its competitors in research and development. While most believe that the US is the world's current R&D leader, most also believe that the US will no longer be the leader by the year 2000. The perception of lost US technical leadership is even more pronounced among scientists.[3]

Gut Feelings:

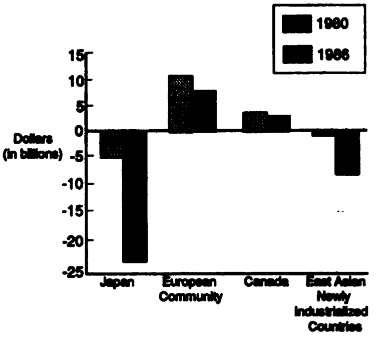
Many S&T leaders have a "seat of the pants" feeling that the US "technology shelf" is not as full as it has been in the past. The US can no longer inventory current technology and put together a superior weapon system. Now it's a challenge. (See Appendix 1.)

Why Now?

Each of these indicators suggests that the US S&T base is not as robust as it has been or should be. But it is equally clear that the US still possesses a potent ability to

CHART 5

THE HIGH-TECH TRADE BALANCE



produce high-technology weapon systems. The large and very skilled US S&T community has not disappeared. There are no smoking guns to convict DoD and civilian S&T leaders of killing the US technical edge. Nothing shows beyond a shadow of doubt that the US will be facing a crisis over the next few years.

Nevertheless, the time has come to attend very carefully to the US science and technology base. A number of factors combine to make S&T base concerns particularly acute today and to demand immediate action.

First, problems in the S&T base will compound over time. Serious difficulties will not develop quickly or unambiguously. As the storehouse of people, skills, facilities, and knowledge was built slowly, so it will degrade slowly. But once they are degraded, the rebuilding process will also be slow, painful, expensive, and uneven. Catching up with determined competitors is difficult. Sooner or later, S&T problems must be faced. Sooner is better: waiting for a "crisis" to develop is self-defeating.

Secondly, budget pressures on research and development spending will be particularly intense. The US defense budget is declining, and it is likely to continue to do so for the next several years. There will be strong pressure to cut all spending accounts, but protecting S&T base funding is likely to be especially difficult. Defending basic research and exploratory development programs during "midnight budget cuts" at DoD is extraordinarily tough because the benefits derived from these activities are very hard to quantify. This pressure will be compounded because a number of high profile, very important programs are reaching their (very expensive) procurement phases. In the Air Force, these include the C-17, the B-2 bomber, and the AMRAAM (the Advanced Medium-Range Air-to-Air Missile). The increased capability provided by these systems is comparatively easy to measure.

Tight budgets also mean that relatively few new systems will be started over the next decade or so. The money to do so simply will not be available. That in turn means that current systems, in order to retain their superiority over adversary systems with greatly increased capabilities, will have to be improved in terms of reliability, maintainability, and supportability, and new capabilities will have to be incorporated as they become available. This technology insertion will require ample R&D funding.

But even more importantly, the current generation of weapon systems will be wearing out and approaching obsolescence by the turn of the century. R&D funding today and over the next decade will have to be sufficient to support the development of the next generation of systems. Without it, the new technologies on which those systems will be based will not be mature. The US will have to continue to rely on older, inherently less capable systems.

The budget pressures could also be exacerbated by an ill-founded optimism pertaining to the perception of the threat emanating from the Soviet Union. Some believe that changes in Soviet domestic politics mitigate the serious military threat the US faced a few years ago. The Soviet Union, however, remains a formidable, very well equipped military adversary. There is, as yet, only President Gorbachev's word that the size of the Soviet military will be reduced and its operational practices and deployment changed to be unambiguously defensive.

Even if developments prove his words true, a more efficient, technically advanced Soviet Union will be capable of producing even more sophisticated hardware. Indeed, a House Armed Services Committee study recently concluded that the Soviet military's approval of perestroika is based on the belief that it will ultimately benefit from the greater ability to produce advanced weapon systems. The end result of Soviet reform may be simply to enhance the significance of the technological competition.

The Roots of the Problem

The indicators above suggest that the US is slipping in the international technological competition. The safest, most sensible time to attend to the problems and their causes is now. The first step toward solutions is identifying causes.

The decline in the US S&T program stems from manifold and interrelated developments. An examination of these lends weight to the assertion that US S&T leadership is in jeopardy, and suggests, in broad stroke, steps to reassert that leadership.

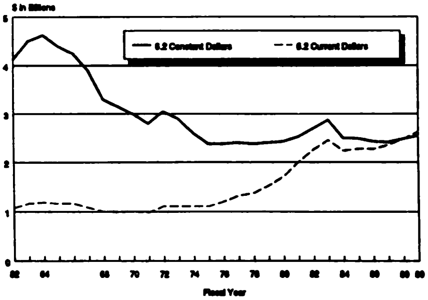
Money

The love of money may be the root of all evil, but wisely spent in ample amounts, money can do a fair amount of good, too. In Fiscal Year 1965, DoD's technology base was funded at about $5.7 billion (in constant FY '88 dollars). By 1986 that had fallen to about $3.4 billion—a 40 percent decline. Basic research dipped from $1.2 billion to about $700 million in 1975, and has since modestly recovered to about $900 million. Exploratory development declined from $4.6 billion and has been about level at $2.5 billion since the mid-1970s.

These figures bode ill for the future. Basic research funding is critical in advancing general knowledge, for recruiting and training new scientists, and generating knowledge with practical application. A 25 percent decline in basic research

CHART 6

DoD Science and Technology Trend
Current and Constant 1988 Dollars



funding can only hinder the effort to stay ahead or abreast of competitors. Likewise, given the significance of exploratory development in determining potential applications of basic research, a decline of more than 40 percent could be disastrous for the development of the next generation of weapons. (See charts 6 and 7.)

Air Force technology base funding shows a similar pattern, peaking in the 1960s, declining in the 1970s, and holding about even in the 1980s. But even the Air Force, the most technology-oriented service, does not meet its own stated goals for technology base spending. The Air Force goal for S&T base program funding is two percent of its total obligational authority. In the FY '90 budget, that figure will be about one and a half percent. (See charts 6 and 9.)

Some in the S&T community, however, suggest that the technology base is only marginally underfunded. They argue that such underfunding is inevitable since a healthy technology base will always generate more ideas than can be adequately funded. Others noted that overall R&D funding has gone up in the 1980s, and that frequently programs classified as advanced development (budget category 6.3a) contribute significantly to progress in basic science and new technology. The National Aerospace Plane (NASP) program, for example, will provide new understandings of aerodynamics, materials, and fluid flows. The Strategic Defense Initiative Innovative Science and Technology program is another example of a 6.3a program that, more accurately described, clearly includes some basic research (budget category 6.1) and exploratory development (budget category 6.2). Getting a handle on the true magnitude of 6.1 and 6.2 spending is not at all easy.

Because of these difficulties, experts in the field frequently are reduced to estimating adequacy of funding based on a feel for what was enough in "the good old days." If the 1960s were the "good old days," that measure indicates that the US technology base is underfunded.

Research and development programs are commonly referred to by budget category. These categories include:

- ☐ 6.1, research in basic and applied sciences;
- ☐ 6.2, exploratory development of the practical applications of that basic research;
- ☐ 6.3a, for building prototypes to determine the feasibility a particular application;
- ☐ 6.3b, advanced development based on system application;
- ☐ 6.4, engineering development of systems in procurement;
- ☐ 6.5, management and support activity for R&D.

The technology base programs consist of 6.1 and 6.2 programs according to the definition of the Office of the Secretary of Defense. The technology base programs plus 6.3a make up the science and technology programs. In other reports, these terms are frequently used interchangeably.

CHART 7

DoD Science & Technology Trend

Current & Constant 1988 Dollars

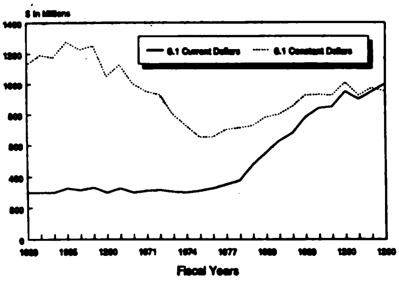


CHART 5

Air Force Science and Technology Trend

Current and Constant 1988 Dollars

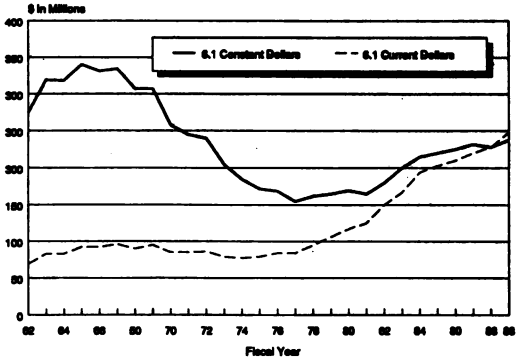
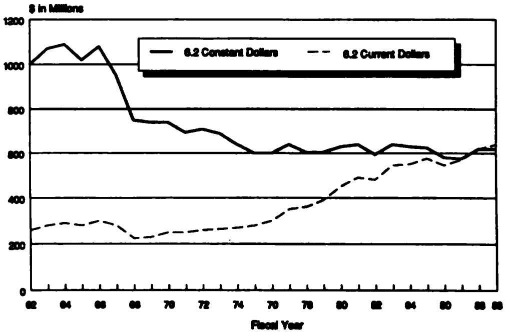


CHART 6

Air Force Science and Technology Trend

Current and Constant 1988 Dollars



Difficult Transition from Laboratory to Field

The technology base is only one aspect of the broader S&T picture. The transitioning of laboratory technology to operational systems is a problem area that has attracted a great deal of attention in the recent past.

R&D, in the view of many experts, comprises a "seamless web" stretching from basic research and exploratory development to a finished product. These programs provide the innovations for new advanced development and engineering development (budget category 6.4) programs, which in turn provide invaluable feedback to new ideas for basic research and exploratory development. Without enough 6.3a programs, fewer prototypes, technology demonstrators, and systems are developed. That results in a slower technology "rollover" back to the 6.1 and 6.2 accounts, and the S&T system gets "plugged up." If any one aspect of the R&D web is not functioning well, then the whole system fails to function well.

DoD's total science and technology base funding increased dramatically throughout the mid- to late-1980s. The increase was concentrated in advanced technology development, but in spite of this increase, transitioning technology remains a serious problem.

Part of this results from the fact that the 6.3a funding increases went almost exclusively to the Strategic Defense Initiative (SDI). SDI R&D carries the promise of some very high pay offs. Some SDI offices, as noted, explore technology with applications broader than blowing up ballistic missiles in flight. It is also an example of "big science," a high-profile program that requires the devotion of immense resources. "Pathfinders" or "big science" can be used as a means of energizing the S&T effort, attracting high quality personnel to the science and engineering fields, accomplishing key goals, and attracting money to improve S&T facilities. However, they also can inject an imbalance in the S&T program by taking funding away from smaller, lower profile programs that could also offer great benefits. S&T base funding has actually declined throughout virtually all of the Reagan Administration when SDI is factored out of the equation. (See charts 10 and 11.)

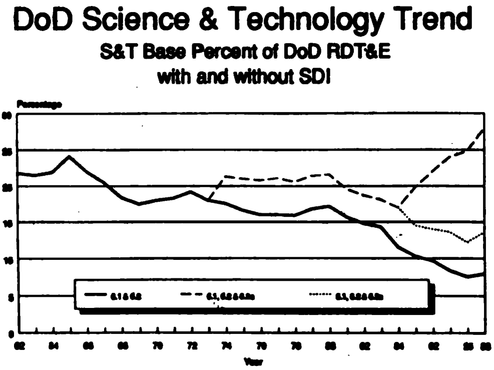
Along with SDI, there are a number of other "pathfinders," which in combination, absorb a sizable percentage of DoD and overall R&D funds. These include the National Aerospace Plane ($3.8 billion), the Space Station ($16 billion), the Superconducting Super Collider ($4-6 billion), and the development of high-temperature superconductors ($150 million over three years). Additional funding in the S&T accounts could allow support for these programs without shortchanging smaller research and development programs.

An immense ammount of attention has been focused recently on the broader reasons for the difficulties in moving laboratory technology into the field. Any effort to duplicate the exhaustive efforts of the recent past is far beyond the scope of this paper, but a summary list of causes would include:

<ins>Micromanagement in DoD</ins>

This takes several forms, including overspecification and the existence of too many management layers with too

CHART 10

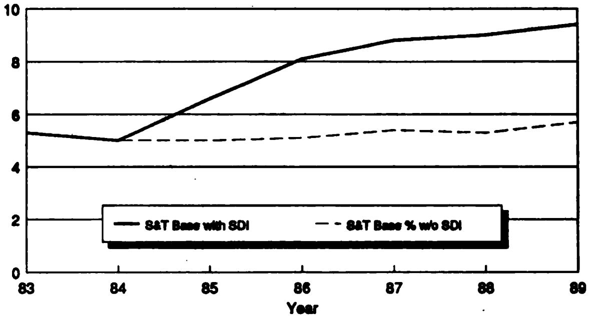


DoD Science & Technology Trend

S&T Base Percent of DoD RDT&E

with and without SDI

CHART 11



DoD Science & Technology Trend
S&T Base Percent of DoD RDT&E
with and without SDI

many decision points. The 1986 Goldwater-Nichols Act and internal reforms have removed some of the layers, and efforts have been (and are being) made to reduce overspecification.

Micromanagement in Congress

The Congress reviews the Pentagon budget proposals line item by line item, program element by program element, and makes literally hundreds of specific changes each year. Many programs are reviewed exhaustively by two, three, or more committees. Budgets are still approved annually, so each program gets these congressional scrubbings every year. This micromanagement results in instability in program funding and prevents intelligent long-term planning.

Efforts to promote two-year budgeting have so far floundered in congressional turf battles. Efforts have also been made, especially in the Senate, to get Congress out of the "nitpicking" mode, so far with limited success.

Instability in Program Requirements

The inordinate length of time required to develop systems is both a measure of the difficulty of transitioning technology and a contributor to the difficulty. As Soviet and adversary capabilities improve, requirements change. Those changes are reflected in changing program specifications.

The problem can be complicated by poor communications between system operators and the R&D community. Operators tend to look at military needs in the very near term, while R&Ders look years down the road. The operators thus often don't know what new technologies potentially could do for them. The Air Force aggressively attempted to meet this problem by involving the using commands in system development and getting the requirements office in Systems Command and the laboratory community together to enhance dialogue between the two.

Faulty R&D Focus

Producibility, reliability, maintainability, and cost control have often been underemphasized in the R&D process in the past. Many would argue that these important program goals still don't get enough attention. Program managers frequently do not complain about a lack of basic technologies but rather a lack of technology maturity that permits reliability and producibility to be effectively incorporated into systems at reasonable cost.

The bottom line is that a lot of money is wasted in advanced development (as well as basic research and exploratory development) because bureaucracy is substituted for good management. In too many programs, there are still too many layers of too many people who can say no at too many points in a program. Budgeting is annual, giving each naysayer many opportunities to say nay. This disjointed approach results in program stops and starts and research and engineering teams broken apart and pulled together again, thus wasting resources. Resources could be used more efficiently.

In part because of transition difficulties (and in part because of the higher costs of now systems for reasons largely independent of advanced development problems, e.g. much higher threat environments that impose more stringent requirements on weapon systems), fewer systems are being developed and produced today. That results in weaker feedback to basic research and exploratory development—feedback that is critical to the next generation of new ideas. Difficulties in 6.3a programs pose a serious stumbling block in trying to correct more general S&T base problems, (See chart 12.)

Government Facilities & Personnel

Government labs and research, development and engineering facilities suffer from personnel and infrastructure problems. These government facilities play an essential role in S&T base programs, accounting for about 30 percent of the S&T base funding and providing an essential link between the users of military systems and the R&D community. The difficulties are both symptomatic of underfunding and, in turn, contribute to the decline of US technical superiority.

Many years of marginal underfunding have resulted in excessive aging of the $5 billion Air Force S&T physical infrastructure. This is an investment that needs to be nurtured and modernized, both to allow state-of-the-art R&D and to attract good technical personnel. Such modernization, however, is expensive and, while vital, more money spent in that endeavor can mean less spent on actual S&T programs. The basic personnel problem in government S&T facilities is retention. A number of factors, including inadequate pay, excessive administrative requirements and paperwork, and career restrictions contribute to the outflow of talented scientists and engineers.

Civil Service employees have not received a decent raise for eight years, and low pay is starting to hurt. Mean salaries for government laboratory workers is $14,000 less than non-government labs. (Chart 13 next page.) This pay disparity has contributed to a serious problem retaining engineers. Engineer retention is now as bad as or worse than Air Force pilot retention.

Furthermore, government science and engineering (S&E) pay has been capped at $72,000 per year, while the private sector pays up to two or three times that for key personnel. Nor is pay keyed to exceptional performance. The 51 percent pay hikes recently recommended by the Commission on Executive, Legislative, and Judicial Salaries were rejected by Congress, but may still (if approved in some modified form) narrow the pay gap. The difficulty government labs have competing for top scientific talent, however, could persist. This difficulty is especially troublesome since successful innovation frequently depends on the skill and intuition of a comparatively few, very talented individuals.(4)

At the some time, key personnel are diverted from the crux of their duties—research and development—by requirements that they monitor contractor performance on some R&D programs and perform administrative housekeeping tasks pertaining to their own R&D programs. The oversight function, paperwork, end petty delays have grown overly burdensome. What most scientists and engineers want to do most is research and engineering. Distraction from these activities detracts from productivity and discourages retention.

The talent drain is compounded by the aging of the Air Force science and engineering workforce. In the Air Force labs, 25 percent of the civilian workforce has 25 years service or more; 40 percent of the personnel in the Air Force S&E system will retire over the next decade. Younger engineers are leaving while older scientists and engineers will soon be retiring in great numbers.

Chart 12

Strategic Forces

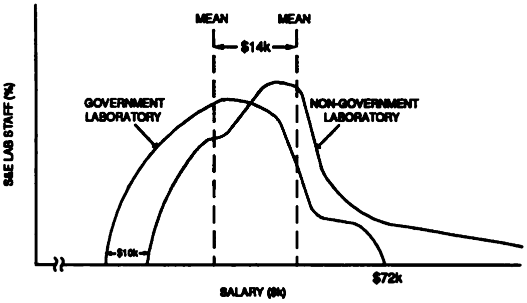
1950s	1960s	1970s	1980s	1990s
B-52 Atlas D Snark Polaris A1 G Washington SSBN	Atlas E Titan I Atlas F Polaris A2 Minuteman IA Titan II Minuteman I Polaris A3 Minuteman II Minuteman III Ethan Allen SSBN Lafayette SSBN	Poseidon C3 ALCM	Peacekeeper Poseidon C4 B-1 Ohio SSBN	SICBM? B-2?

Tactical Air Force

1950s	1960s	1970s	1980s	1990s
F-100, F101, F-102, F-104, F-105, F-106, F-4, F-5	F-111, A-7	F-15, F-16 A-10	F-117A	ATF? A-12?

CHART 13

S&E Salary Comparison



Finally, "revolving door" legislation is a problem. Concern in Congress about potential conflicts of interest led to passage of legislation that inhibits free movement between government service and private industry. Those limits have the potential side effect of inhibiting government service among talented young people who also want to pursue a career in private industry. For example, only three of the 75 professional scientists and engineers in DARPA as of late 1986 were hired from industry.

Replacing these invaluable people is not easy, and could get tougher in the future. First, there is a smaller pool of people from which to draw replacements. By 1995, there will be 20 percent fewer 19-24 year-olds than today. Competition for the best and brightest of these will be severe. Second, math and science education in the US is lagging. A third of the doctorates awarded by US universities in the physical sciences and more than half of those awarded in engineering go to foreign students. There is also a serious shortage of qualified primary and secondary school math and science teachers. A recent thirteen nation survey indicates that US high school seniors ranked virtually last in mathematics (about the same as Thailand and Hungary) and very low in the sciences (on average, eleventh out of the thirteen).(3) Third, S&T funding is likely to be tight for foreseeable future.

Lack of Farsighted Leadership

Perhaps the most fundamental management problem facing the S&T community is a broadly perceived lack of farsighted leadership over the past decade. No clear national policy inspired or guided the S&T effort. While the commitment of the new Administration to S&T funding is at this point an open question, a strong commitment to invest in the S&T base has been lacking in the recent past.

This is especially important for basic research and exploratory development. Because the benefits are long-range, long-term, and uncertain, a strong, farsighted leader is needed to promote the technology base program and protect it against the monetary pressures imposed by tight budgets and the demands of programs with more immediate, concrete benefits. Without this leadership, DoD neglects directions to add money to technology base programs because the DoD can get away with it. There have been no S&T stalwarts over the last several years, such as former Secretary of Defense Harold Brown and former Director of Defense Research and Engineering William Perry were during their tenures. Nor has recent OSD leadership provided effective top-down guidance on technology base investment.

Strong leadership can also ameliorate some of the more difficult communication and coordination problems that cut across organizational lines. There are persistent criticisms that coordination of the S&T programs of the services, DoD, and other departments is inadequate and that excessive compartmentalization of information hinders S&T efforts. Strong central leadership could overcome come of those institutional roadblocks.

The lack of focus at the national level and in DoD has encouraged Congress to fill what it perceives as a policy vacuum. There is a plus side and a down side to this. Because of the apparent lack of strong leadership, congressional leaders haven't seen a coherent long-range plan in the R&D arena. Congress has thus tended to micromanage this part of the budget.

On the plus side, Congress is pushing DoD to pay more attention to the S&T base. The perception that S&T accounts are underfunded led Congress to add $500 million to the S&T budget in FY '89. Congress also approved an experimental alternative personnel program, along with additional fellowships for technical education, and studies of how to bring women and minorities into science and engineering in an attempt to deal with the S&T personnel problems.

Because DoD leadership can't define its rationale for spending on critical technologies, Congress also required establishment of a critical technologies plan. DoD most annually identify in the plan the most important technologies for future weapons development, DoD spending on each, long-term goals, US standing in these technologies compared to our allies and adversaries, and a plan for eventual deployment. DoD submitted a list of 22 critical technologies to Congress in March 1989.

The Air Force, to its credit, provided strong, sagacious leadership for its S&T effort through Project Forecast II (PFII). PFII identified technologies key to future capabilities and provided guidance on how to focus future research and development. While PFII failed to result in increased overall funding for the S&T program, it did result in increased funding for a select few critical technologies. Five high leverage initiatives—photonics, directed energy technology, high temperature materials, nonlinear optics, and high density propellants—have been accorded a special status whereby none are funding-constrained and each is limited only by the ability to advance the technology. Six others—the high performance turbine engine, smart skins, knowledge based systems. brilliant weapons, robotic telepresence, and super cockpit—have benefited from increased Air Force investment.

While Forecast II is cause for some optimism, the Air Force S&T program too has suffered from the lack of a strong advocate outside Air Force Systems Command. Systems Command recently merged its requirements and S&T organizations into a new one run by the AFSC Deputy Chief of Staff for Plans and Technology. The current thrust at Systems Command is to provide a forum for operators to sit down with technologists and discuss the relationship of requirements with the capabilities that new technologies could potentially provide. The operators thus become more aware of what technology can do for them and more likely to advocate S&T efforts earlier in the process.

This optimism is tempered, however, by concerns that AFSC no longer considers itself an advocate of specific systems. Without some advocacy in Systems Command, there may be some risk that high technology will be undersold by the command that develops it, and thus underappreciated by the commands that could most benefit from it.

Fear of Failure/Test for Success: The Impact on Scientists and Engineers

The researchers and engineers in the S&T community inevitably bear the brunt of funding shortages, congressional and DoD micromanagement, and lack of strong leadership. Anticipation of problems can, in turn, exacerbate the difficulties they face.

For example, researchers get too concerned with the need to establish requirements to justify a demonstration project. Engineers have to justify concepts and budgets in the Defense Acquisition Board (DAB) process, with clear requirements, prior to engineering. S&T programs are being measured too much as the front end of a full scale development programs. Technical specialists lose sight of the fact that their efforts are justified by expansion of the technology base. The resulting environment is not one in which programs can get a good hearing.

Researchers and engineers also get wrapped up in the inevitability of declining budgets. This fatalism can generate self-defeating arguments: "We won't be able to afford a new airplane development for 35 years so let's not do another airplane demonstration and create even more demand." The technical process is aborted by technologists trying to guess political and budgetary trends 20 years down the road, and funding shortfalls can result from this destructive self-fulfilling prophecy.

Self-censorship is also a straightforward result of micromanagement and much higher visibility at the very early technical and administrative stages of a program. The audit trail in technology now goes all the way back to program inception. And if a risky project fails to pan out as projected, critics, often in Congress or the media, punish the risk-takers. Not surprisingly, scientists and engineers back off from taking risks—the same risks that can lead to very high pay-offs. DARPA is considered one of the few places in DoD that failure is still permissible, at least if the cause is technical overambition rather than mismanagement.

This fear of failure has at least one other onerous effect as well. In technically challenging programs, it can lead to a "test for success" syndrome, to avoid the criticism that is inevitable, however unjustified, if tests result in system failure. These tests that fail, however, by showing how a system performs under maximum stress, can be much more revealing to technologists seeking to improve a new system.

The Industry Role

Industry also plays a critical role in developing the defense technology base, in large measure through independent research and development (IR&D). DoD provides some IR&D money to defense industries, believing in the importance of a contractor's freedom to choose the technical path that will most improve a its competitiveness. The Defense Science Board, however, recently concluded that problems with IR&D are reaching crisis proportions.(4)

Money:

Money is one problem. There is no strong advocate for IR&D funding in the Pentagon. In addition, the status of privately financed IR&D is not as secure as it once was within industry itself. Such spending meets more resistance from corporate leadership. The result: IR&D funding declined from 1984 to 1987. (See chart 14.)

Companies that at one time maintained constant IR&D ceilings or a formula for determining IR&D levels, now often do not. While IR&D funding in many companies used to be a percentage of sales, IR&D programs must, more and more, be justified by the same tests of relevancy and connection with specific systems that DoD R&D programs face. Those that fail these relatively strict relevancy tests suffer the most in the funding competition. One well-known aerospace company, for example, now provides a small, set IR&D budget but then requires its labs to go to component commands, convince them that the work being done is relevant, and then go on contract for the rest of their budget. If the DoD technology base is underfunded, this scheme of financing industry R&D could easily backfire.

The IR&D funding problems are compounded by two factors. First, the government IR&D money is in a pot mixed with bid and proposal (B&P) funding. B&P expenses, in part because of the complexity of DoD specifications and regulations, are very high and growing. That, in effect, shrinks the pool of funds available to pay for IR&D. Second, for some programs—the Advanced Tactical Fighter (ATF), and V-22 Osprey, and the Light Helicopter Experimental (LHX), for example—government R&D funding does not cover all of the development costs. Contractors have to invest their own R&D money in these systems, sometimes a lot of it. This expense cannot be covered by government IR&D support; it is taken out of company discretionary funds. Company R&D funds thus go to specific programs rather than projects and programs designed to expand the technology base.

Competition:

Even the current emphasis on competition, the sacred cow of acquisition reformers, can hinder industry S&T base activity. Industry is less willing to pursue new approaches and develop new technologies because a production contract does not necessarily follow successful developmental efforts. Other companies may compete for—and win—the production run.

Furthermore, the Competition in Contracting Act (CICA), designed to assure low cost and minimize risk in big procurement programs, is being applied to "procurement" of small basic research and exploratory development programs. Low cost and low risk are clearly not the optimal criteria in judging "procurement" of top scientific and engineering talent to explore innovative and inherently risky solutions to difficult problems. Yet there is little flexibility in the application of CICA, and the final authority on these competitions is frequently a procurement officer led by CICA guidelines.

Short-term Focus:

Industry's short-term investment focus poses more difficulties. Investors are typically concerned with maximizing profits and minimizing risk. Advanced technology development, almost by definition, is a gamble, and defense, simply stated, is a risky business. Industry is thus reluctant to invest in IR&D and in capital based on new technologies. Many industries are leaving the defense business altogether.

Shifting Incentives:

Yet another problem facing industry is the constantly shifting structure of incentives offered by the government to induce investment in technology. The frequent changes in tax laws, and policies that pertain to cost recovery, profits, and progress payments can create conflicting incentives, wreak havoc in attempts at longer-term planning, and cause confusion in any effort to measure the effectiveness of government incentives. When combined with the instability imposed by frequent and sometimes violent shifts in program funding, industry seems not so much to operate on firm ground as shifting sand.(7)

CHART 14

Independent Research & Development Expenditures

	1984	1985	1986	1987
Contractor IR&D Expenditures ($ Millions)	$5,173	$4,999	($5,042)	$4,715
IR&D Expenditures as a Percent of DoD Sales	5.8%	4.8%	4.4%	3.9%

Conclusions and Recommendations

The US S&T community still has many strengths and many assets. It has provided this nation with the the best weaponry in the world. From these perspectives, the tone of this report may be too negative. But Administration, congressional, and military leaders should not be sanguine about the outlook for the future.

If current trends continue, the US could end up a second rate technology power. The warning signs are clear. Even in the days when defense budgets were expanding, the S&T base program (excluding SDI) did not keep pace.

The purpose of this report is not to generate a laundry list of "fixes" for the S&T base, to issue a clarion call for radical changes in the military S&T program, or to affix blame. No radical changes are required, and no institution or individual can be held responsible for a condition that took decades to evolve. But a few modest steps—all obvious—have a reasonable chance to improve the condition of the S&T base program:

☐ Funding should be increased. Modest dollar amounts can make a huge percentage difference in the Air Force basic research and exploratory development budgets. Modest increases in advanced development could amply fund "big" and "little" science, along with a host of other S&T needs.

☐ Strong advocates for the S&T program should be appointed at the White House and the Pentagon. While the S&T program may be underfunded, proper leadership can advocate and defend what is needed, assure the "seamless web" from basic research to engineering development, and get the right people to the right places. At DoD, such an advocate should speak up to protect IR&D funding.

☐ Pay for Civil Service science and engineering personnel should be increased and quality rewarded. The importance of high quality people cannot be stressed enough, since the technology base relies so heavily on the intuition of relatively few top people. Recruiting more women and minorities into science and engineering makes a lot of sense also.

These steps are common sensical. Many other actions are possible. The fundamental point, however, is that action is required, it is required in the near term. The problems are serious. The cost of action is modest. The consequences of inaction are dire. The consequences will not be seen in the short run, but in the long run, the essence of the nation's strength—the ability of its people to innovate and create—will be undermined. We ignore the warning signs at our own peril.

Appendix

A Tale of Two Fighters

The intuitive feeling of R&D experts concerning the availability of off-the-shelf technology to produce militarily superior systems can be supported by looking at the development histories of two fighters: the 1960s vintage F-4 and the USAF fighter of the of the future, the Advanced Technology Fighter (ATF).

Development time:

One simple indication is development time. Prototype contracts for the F-4 were signed October 1954. Because requirements and specifications were very ill-defined, the go-ahead for prototype construction was only given in May 1955. The F-4 first flew in May 1958 and low level production for the flight test program started in 1960. The entire process took about five years.

Not surprisingly, the conversion of the F-4 for Air Force use moved even more quickly. The F-4C incorporated an updated engine, new landing gear, new main radar, new navigational computer, an enhanced instrument panel and dual controls in the rear cockpit. The Air Force first evaluated the F-4B in 1962. The F-4C first flew a year later, in May 1963.

Prototype designs for the ATF were submitted July of 1986. The demonstration-validation (dem-val) phase of the program was initiated in November 1986. The first two ATF prototypes are scheduled to fly in 1990. Avionics prototypes are also expected to be ready in 1990. The dem-val phase of the program will be completed in December 1990, after which the ATF will enter full-scale development (FSD). FSD has been stretched out a year, partly because of "unexpected complexity" (according to Air Force Chief of Staff Gen. Larry Welch), and will last until 1995. At that point, flight testing will start, and the aircraft is scheduled to reach initial operating capability a couple of years after that. From submission of prototype designs to start of flight testing will be about eight years—if all goes well.

Much of the ATF program is still classified, but a brief review of the subsystems used in the F-4 and under consideration for the ATF suggests that lack of mature subsystems is at least one cause of the longer development period.

Powerplants:

The F-4 engine, the J79, was under development by 1951. It was running by 1954—the year in which prototype contracts were signed. The J79 was, for its day and age, a state-of-the-art engine. Its design utilized moveable vanes between compressor stages so that the engine could adapt itself to the different demands of starting, subsonic and supersonic flight. The variable inlets had never been used on fighter aircraft before. It generated more thrust for the same air flow and was slimmer with less drag-inducing intakes because of its high pressure ratios at supersonic flight. The engine provided an increase in performance over others in use at the time from Mach 1.5 to more than Mach 2.5.

The ATF will use one of two prototype angines, the YF119 or the YF120. Both are running now, but the prototype program will continue to 1992. They should provide much better thrust-to-weight ratios measured at supersonic speeds than current engines. This will allow supersonic cruise without afterburners and reduced infrared signatures. After lengthy consideration, the decision was made to drop thrust reversing and thrust vectoring, which would improve short take-off capability and maneuverability, because of cost and complexity. The point here is that the capabilities to be embodied in the final product were determined only after the engineers figured out what they could do.

Aerodynamics:

The F-4 airframe was built around the new, slimmer engine. It was composed mostly of aluminum and titanium in order to save weight. Relatively few modifications to the wing and tail were required to solve stall and stability problems. These included angling the stabilizers downward, expanding the outer folding panels of the wing in chord to create a large dogtooth and tilting them up at a 12 percent dihedral angle. The program included more than 5000 hours of wind tunnel tests. No modifications to the airframe were needed as a result of flight test results.

The ATF airframes have not flown yet, but the shape of the prototypes are apparently pretty well set. The weight requirement (no more than 50,000 pounds), however, imposes tough demands on the contractors. Weight saving composites, fiber optics, digital computing in the flight controls, and stealth technologies are all being used. Smooth skin, variable camber wings—which change shape in order to sustain peak aerodynamic efficiency by using internal devices rather then flaps—were under active consideration for the ATF. These features have been dropped because the technology is not mature enough. It may also incorporate fly-by-light (as opposed to fly-by-wire) technologies. Again, the technologies are still under development,

Avionics:

The first F-4s used the APQ-72 as the primary sensor in its fire control system. Its AAA-4 infra-red detector was used to detect targets (or acquire them from the command radar), tell heat-seeking missiles where to look, and allow the missiles to lock on target and fire earlier. The AJB-3A bombing system was also incorporated.

Avionics technology is considered the ATF's "long pole in the tent." Overcoming difficult software integration problems is the key. The ATF is likely to use technology being developed in the ICAAS program (Integrated Control and Avionics for Air Superiority) by the Flight Dynamics Laboratory and Avionics Laboratory at Wright-Patterson AFB, Ohio. The goal is to integrate avionics and flight controls. The ATF will also use technology being developed in the INEWS (Integrated Navigation and Electronic Warfare System) and ICNIA (Integrated Communications, Navigation and Identification Avionics System) programs.

Comparison to Adversary Aircraft:

The F-4 was considered the the best multirole aircraft of its era. More than 5,000 F-4s were produced over a span of more than twenty years. It was vastly superior to the older Soviet MIG-17 and MIG-19, and it was superior in payload, range, armament, and avionics to its primary competitor, the MIG-21. Technologies that were essentially "off the shelf" accounted for the F-4's superiority.

There is little reason to doubt that the ATF will also be superior to its principal competitors, be they MIG-29s and Su-27s or their follow-ons. That superiority, however, will derive from the results of innovative engineering that is continuing during prototype development and an extensive period of technology maturation.

The claim is made sometimes that the ATF technology challenges are much more formidable than those of the F-4, hence the technical uncertainties and risks are correspondingly greater. But it is important to note that the challenge is relative not only to past US achievement but to the technological accomplishments of US rivals. In this sense, the F-4 and the ATF addressed parallel demands. Soviet fighter aircraft introduced in the early 1950s, better in some respects than US fighters, posed a serious threat to US technical superiority. The F-4 was designed to meet those challenges. The ATF will respond to advances in Soviet aerodynamics and avionics that place at greater risk current generation US fighters.

Conclusions

No airplane goes through its development phase performing flawlessly. But clearly the developers of the F-4 had relatively mature and (for their time) capable subsystems at their disposal. To put together a superior product, they chose an engine, materials, and avionics that were developed to a point where there was little doubt they would work harmoniously together.

The ATF design philosophy is different. The Air Force determined that it needs a new aircraft to maintain technical superiority. It is using the ATF quite deliberately to push the state of aviation technology to achieve that superiority. It is doing so because the F-4 design philosophy—to utilize mature, tested subsystems—is no longer adequate to the goal.

The claim is sometimes made that the apparent lack of mature subsystems is just an illusion attributable to more careful examination of technology programs much earlier in their life-cycles. Technology programs are put through tough tests in order to establish their relevance to military systems. Their progress is then monitored by DoD (and sometimes by Congress) from this very early stage. This, it is supposed, makes the technology shelf look emptier because the technologies on the shelf appear less mature.

This argument, however, has something of a "smoke and mirrors" quality about it. All technologies are immature at some stage in their development. What is relevent is the timing. The Air Force and the Navy develop requirements for new airplanes. In the 1950s, relatively mature power plants, avionics, and aerodynamic technologies were available to meet those requirements. In the late 1980s, that does not appear to be the case. ☐

Endnotes

1. Science, 11/15/88, p. 1118.

2. Using Federal R&D to Promote Commercial Innovation, Congressional Budget ffice, April 1988, p. 21. Chart 2 based on chart on p. 22 and Michael Davey and Genevieve Knezo, The Federal Contribution to Basic Research, Congressional Research Service, July 23, 1987, p. 21.

3. Research and Development, September 1988, p. 17.

4. Technology Base Management, Report of the Defense Science Board 1987 Summer Study, Office of the Under Secretary of Defense for Acquisition, December 1987, p. 15-17.

5. Changing America: The New Face of Science and Engineering, Interim Report, The Task Force on Women, Minorities and the Handicapped in Science and Technology, September 1988, p. 22 and 24. Another study, by the National Science Foundation, ranks US 13 year olds last in math and science among the six nations surveyed.

6. Technology Base Management, op. cit., p. 29.

7. The Defense Industrial and Technology Base, Volume I, Final Report of the Defense Science Board 1988 Summer Study, October 1988, pps. 25-32.

Selected Bibliography

Air Force Association and the USNI Military Database. Lifeline in Danger: An Assessment of the United States Defense Industrial Base. Arlington, Virginia: Aerospace Education Foundation, September 1988.

Davey, Michael E. Research and Development Funding: FY 88. Washington, D.C.: Congressional Research Service, March 30, 1988.

Davey, Michael E. and Knezo, Genevieve. The Federal Contribution to Basic Research. Washington, D.C.: Congressional Research Service, July 23, 1987.

Defense Science Board. Technology Base Management. 1987 Summer Study, Washington, D.C.: Office of the Under Secretary of Defense for Acquisition, December 1987.

Defense Science Board. The Defense Industrial and Technology Base. Volume 1, 1988 Summer Study, Washington, D.C.: Office of the Under Secretary of Defense for Acquisition, October 1988.

Hallion, Richard P. Girding for War: Perspectives on Research, Development, Acquisition, and the Decision-Making Environment of the 1980s. Edwards Air Force Base, California: History Office, Air Force Flight Test Center, May 1, 1985.

Knezo, Genevieve J. Science and Technology Policy and Funding. Washington, D.C.: Congressional Research Service, June 1, 1988.

The MAC Group. The Impact on Defense Industrial Capability of Changes in Procurement and Tax Policy. Washington, D.C., The MAC Group, February 1988.

Marsh, General Robert T. "The Technology Required for Defense in the Future," speech to Southern Center for International Studies, Atlanta Georgia, June 9, 1983 by the Commander, U.S. Air Force Systems Command.

Marsh, General Robert T., USAF (Ret). "Our Tech Base Needs Attention," AIR FORCE Magazine, July 1986, Volume 69, No. 7, pages 90-92.

U.S. Congress, Office of Technology Assessment. The Defense Technology Base: Introduction and Overview – A Special Report. OTA-ISC-374, Washington, D.C.: U.S. Government Printing Office, March 1988.

U.S. Congress, Task Force on Science Policy, Committee on Science and Technology, U.S. House of Representatives, Congressional Research Service, Science Support by the Department of Defense. Washington, D.C.: U.S. Government Printing Office, December 1986.

U.S. Department of Defense, Canadian Department of National Defence, American Defense Preparedness Association, Canadian Defence Preparedness Association. Look to the Future: Proceedings of 1988 Conference on Defense Industrial Strategy. September 7-9, 1988.

The CHAIRMAN. Thank you very much. That again is a very helpful set of observations for us and I appreciate as well your offer to help and your kind words.

Finally, we will hear from Mr. Paul Math, who is the Senior Associate Director for Research, Development, Acquisition, and Procurement, National Security and International Affairs Division, General Accounting Office. Mr. Math, we would like to hear from you now.

STATEMENT OF PAUL F. MATH, SENIOR ASSOCIATE DIRECTOR FOR RESEARCH, DEVELOPMENT, ACQUISITION, AND PROCUREMENT, NATIONAL SECURITY AND INTERNATIONAL AFFAIRS DIVISION, U.S. GENERAL ACCOUNTING OFFICE

Mr. MATH. Thank you very much, Mr. Chairman.

We appreciate this opportunity to appear before the committee today to discuss S. 1379 to reauthorize and amend the Defense Production Act of 1950.

In recent years the United States has moved to a more interdependent approach in procuring parts and components for its major weapon systems. It is apparent that the U.S. national security is increasingly tied to the strength of the Nation's economy and the ability of industry to compete, particularly in areas where technology leadership is important.

In general, we agree with the thrust of several provisions in S. 1379 that seek to modernize the Defense Production Act of 1950 by providing or authorizing mechanisms or tools to enhance the competitiveness of the defense industries.

We also have some observations for your consideration regarding selected provisions and we believe that the Congress should consider the need for obtaining adequate information on selected key industries that support major weapons systems.

First of all, let me talk a little bit about the selected provisions that we support.

S. 1379 would extend protection from antitrust provisions to apply to participants in sanctioned industry consortia.

Consortia participants which may include potential competitors and universities would be allowed to collaborate on technologies for which significant resources or interdisciplinary research are considered essential.

One example of government-industry consortia is the SEMATECH. SEMATECH has been proposed as a model for other consortia. In this regard, we agree with the Congressional Budget Office, which noted in its September 1987 report that it is appropriate for government to assist a particular firm or industry if such intervention can be justified on the basis of providing public benefits that go beyond the benefits provided to the affected firms.

Establishing consortia in support of national defense provides public benefits that do go beyond those provided to the affected firms; consortia can be one of the mechanisms to facilitate the transfer of high technology research among all industries, civilian and defense.

We believe that the proposed antitrust-related changes improve DOD's ability to increase the efficiency, competitiveness and responsiveness of the defense industrial base by allowing pooling of resources to effectively resolve production problems.

In terms of investment in advanced manufacturing technology and processes, we have consistently supported the concept in S. 1379 of modifying profit policies to encourage contractors to invest in advanced manufacturing technology, production equipment and manufacturing processes to improve the efficiency and competitiveness of the defense industrial base. For instance, we have supported increased rates of profit to encourage competitiveness through investments to modernize production systems and equipment.

S. 1379 also provides for the periodic assessment of defense industry's capabilities to carry out defense plans. We support efforts to assess industry's capabilities to respond to defense needs. Essential to these industry performance assessments is DOD's ability to prepare realistic industrial plans. Accurate information, including data on lower level tiers of supply is necessary to achieve realistic plans. DOD is currently revising the industrial preparedness planning approach to assess defense industrial capabilities to meet demands. A DOD working group is discussing, among other things, how the services should approach this integrated industrial capabilities assessment not only to address surge and mobilization issues but also those international issues that may affect competitiveness at all levels of the industrial base. This integrated assessment approach is a step in the right direction.

In addition, S. 1379 supports greater integration of national economic policies and national security policies. We support such efforts which should improve the U.S. ability to maintain a healthy and competitive industrial base. For example, this could help to negotiate and achieve the best terms possible for international agreements.

We not only support DOD's inclusion in policy-making discussions of broad economic issues that have an impact on the defense industrial base but also support increasing the role of Commerce in assessing the impact of international defense programs, such as military coproduction efforts, on the overall U.S. industrial competitiveness.

For instance, in our review of the FS-X program, we noted that during preliminary FS-X discussions, DOD separated trade and economic issues from national security issues and did not coordinate with or solicit the views of Commerce. In our FS-X review, we supported agency efforts to establish procedures to ensure coordination and consultation in analyzing the benefits and disadvantages of future programs.

Next I'd like to discuss a little bit our observations for your consideration.

The Defense Production Act requires the President to submit to certain committees of the House and Senate a detailed annual report on the impact of offsets on defense preparedness, industrial competitiveness, employment, and trade of the United States. OMB chairs a coordinating committee composed of selected Federal organizations.

The act currently provides a formal mechanism for reflecting in the report differences or dissenting views among the agencies on the interagency committee.

Under S. 1379, the Department of Commerce would have the responsibility of preparing the report and submitting it to the Congress.

In addition, S. 1379 would provide that alternative findings or recommendations may be included in the report if the Secretary of Commerce has been given, during preparation of the report, an independent study or analysis on which such views are based.

We believe that S. 1379's proposed amendments to section 309 should be changed to better provide for the disclosure of significant dissenting agency views. That is, agencies who participated or consulted in the development of the report should not be required to perform additional studies or analyses to have their significant dissenting views included in the report. In the past, such views have not been provided and agency differences regarding study methodologies and assumptions that may have significantly affected the report's conclusions have not been included.

Although we support the need to enhance the title III programs, we have several observations regarding the Defense Production Act Fund. First of all, stockpile managers are concerned that acquiring the initial $200 million from the national stockpile could have a detrimental impact on their program. Another concern is the potential obsolescence of stockpiled material. S. 1379 provides authority to stockpile not only critical commodities, but also components and subassemblies in sufficient quantities to meet mobilization needs. Rapid technology developments could make such goods obsolete. Thus, managers of any program of this nature must be very selective in the components that are included. In order for managers to be selective, accurate information on defense needs regarding components of manufacturing for which we are foreign dependent is necessary.

A tool basic to our Nation's ability to accurately assess the health of our defense industrial and technology base and ensure that critical capabilities are accessible is adequate information on selected defense industries that support major weapon systems, including critical subtier industries.

In recent years, a number of studies have surfaced an increasing concern about a growing dependence on foreign sources for materials and components for our weapon systems. Although evidence of DOD's foreign dependence for critical items in certain weapon systems exists, it is not possible to measure the overall impact or extent of dependence because DOD has no reliable system to identify foreign dependence in parts, components, and technologies essential to defense production.

DOD's current ad hoc approach to defense industrial base data collection and analysis can only provide information on general industry sectors and foreign dependencies through special studies. We believe this ad hoc approach is inefficient and of limited effectiveness for several reasons. Systematically obtaining information would improve DOD's ability to identify potential sources for important items and technologies. DOD officials stated that reliance on ad hoc data collection using varying methodologies, puts DOD in a reactive role and limits its ability to identify trends in critical industrial sectors.

In general, we believe that an improved approach to defense industrial base data collection and coordination especially at the subcontractor levels of production is necessary for DOD to properly plan and be in a position to take appropriate action regarding the industrial base, including the economic, trade, and technology security implications of procuring items and components of major weapon systems from foreign sources. An improved approach to data collection and coordination would also enhance DOD's ability to make prudent decisions about the National Defense Stockpile and offset agreements with foreign countries that may adversely impact the defense industrial base.

Mr. Chairman, that concludes my statement. Attached are the responses to the questions you specifically requested that we address. I will be happy to respond to any additional questions you or the other members of the committee may have.

Thank you.

[The complete prepared statement of Paul F. Math follows:]

United States General Accounting Office

GAO Testimony

For Release
on Delivery
Expected at
9:30 a.m. EST
Thursday,
March 1, 1990

Comments Relating to Reauthorization of The Defense Production Act

Statement of
Paul F. Math, Director, Research, Development,
Acquisition, and Procurement Issues
National Security and International Affairs
Division

Before the
Committee on Banking, Housing, and Urban Affairs
United States Senate

GAO Form 160 (12/87)

SUMMARY

Mr. Chairman and Members of the Committee:

We appreciate this opportunity to appear before the Committee today to discuss Senate Bill S. 1379 to reauthorize and amend the Defense Production Act of 1950 (DPA).

In recent years the United States has moved to a more interdependent approach in procuring parts and components for its major weapon systems. It is apparent that national security is increasingly tied to the strength of the nation's economy and the ability of industry to compete, particularly in areas where technology leadership is important.

We agree with the emphasis that S. 1379 places on a healthy industrial and technological base. We also generally agree with the thrust of several provisions in S 379 that seek to modernize the Defense Production Act of 1950 by providing or authorizing mechanisms or tools to enhance the competitiveness of defense industries In particular we support those provisions that seek to foster development of technologies and advanced processes by providing protection from the antitrust provisions inhibiting joint undertakings, (2) encourage contractors to invest in modern equipment to increase productivity, (3) improve the integration of national security and economic policy, and (4) ensure a realistic assessment of the demands placed on industry by national defense plans.

In addition, we have some observations for your consideration. DPA requires an annual report to the Congress on the impact of offsets on U.S. defense preparedness, industrial competitiveness, employment, and trade. We believe that S. 1379 should be changed to better provide for disclosure of significant dissenting agency views in the report. Such views have not been disclosed in the past. S. 1379 currently does not propose this change.

We have two concerns regarding the DPA fund that S. 1379 would create. First, acquiring the initial $200 million for the fund from the national stockpile could have a detrimental effect on the stockpile program. Second, S. 1379 would authorize stockpiling components and subassemblies in sufficient quantities to meet mobilization needs; but rapid technological developments increase the risk that inventories of such goods could become obsolete.

Finally, we would like to emphasize that effective implementation of DPA requires systematic information gathering and analysis to accurately assess the health of our defense industrial and technology base at all levels and ensure that critical items and technologies are available We believe that the Congress should consider the need for adequate information on selected defense industries that support major weapon systems, including critical subtier industries.

Mr. Chairman and Members of the Committee:

We appreciate this opportunity to appear before the Committee today to discuss Senate bill S. 1379 to reauthorize and amend the Defense Production Act of 1950.

In recent years the United States has moved to a more interdependent approach in procuring parts and components for its major weapon systems. Today, many nations have increased their participation in the development and production of these systems. It is apparent that U.S. national security is increasingly tied to the strength of the nation's economy and the ability of industry to compete, particularly in areas where technological leadership is important. We agree with the emphasis that S. 1379 places on a healthy industrial and technological base. The health of the industrial and technological base contributes to the technological superiority of our defense equipment - a cornerstone of our defense national strategy.

In general, we agree with the thrust of several provisions in S. 1379 that seek to modernize the Defense Production Act of 1950 by providing or authorizing mechanisms or tools to enhance the competitiveness of defense industries.

We support provisions that seek to:

-- foster development of technologies and advanced processes by providing protection from the antitrust provisions inhibiting joint undertakings;

-- encourage contractors to invest in modern production systems and equipment that increase productivity and reduce costs;

-- improve the integration of national security and national economic policy; and

-- ensure a realistic assessment of the demands placed on industry by national defense plans.

We have some observations for your consideration regarding provisions that (1) require the President to submit an annual report to the Congress on the impact of offsets on defense preparedness, competitiveness, trade and employment; and (2) establish a revolving fund for purposes such as purchase commitment programs.

Finally, we would like to emphasize that effective implementation of the Defense Production Act requires systematic information gathering and analysis to accurately assess the health of our defense industrial and technology base at all levels, and ensure that critical items and capabilities are available. We believe that the Congress should consider the need for obtaining adequate information on selected key industries that support major weapon systems.

SELECTED PROVISIONS WE SUPPORT

Industry Consortia

S 1379 would extend protection from antitrust provisions to apply to participants in sanctioned industry consortia. Such consortia are arrangements among entities for the purpose of jointly undertaking a specific program of basic research, research and development, production marketing or any combination thereof, relating to industrial resources or critical technologies found to be essential to the preservation or enhancement of the industrial or technology base of the United States supporting the national defense.

Consortia participants which may include potential competitors and universities would be allowed to collaborate on technologies for which significant resources or interdisciplinary research are considered essential.

One example of government-industry consortia is the Semiconductor Manufacturing Technology Institute (SEMATECH). It was formed to provide the U.S. semiconductor industry the domestic capability for world leadership in manufacturing.

SEMATECH has been proposed as a model for other consortia. In this regard, we agree with the Congressional Budget Office, which noted in its September 1987 report, The Benefits and Risks of Federal Funding for SEMATECH, that it is appropriate for government to assist a particular firm or industry if such intervention can be justified on the basis of providing public benefits that go beyond the benefits provided to the affected firms.

We believe that the proposed antitrust related changes improve DOD's ability to increase the efficiency, competitiveness, and responsiveness of the defense industrial base by allowing pooling of resources to effectively resolve production problems. These benefits are achieved through the use of cooperative or consolidated use of the skills technological resources and expertise of for-profit business concerns, not for profit entities, and educational institutions.

Establishing consortia in support of national defense provides public benefits that go beyond those provided to the affected firms; consortia can be one of the mechanisms to facilitate the transfer of high technology research among all industries, civilian and defense.

DOD's current efforts to prepare a national strategy to pursue important technologies should also enhance the effectiveness of these kinds of activity. A planned strategy that will set priorities among different technologies, define areas that need to be funded, those in need of control, as well as areas that need to be fostered, could provide the guidance necessary to focus the government's efforts.

Investment in Advanced Manufacturing Technology and Processes

We have consistently supported the concept in S. 1379 of modifying profit policies to encourage contractors to invest in advanced manufacturing technology production equipment and manufacturing processes to improve the efficiency and competitiveness of the defense industrial base For instance, we have supported increased rates of profit to encourage competitiveness through investments to modernize production systems and equipment.

Assessing Industrial Responsiveness Capabilities

S 1379 provides for the periodic assessment of defense industry's capabilities to carry out defense plans. We support efforts to assess industry's capabilities to respond to defense needs. Essential to these industry performance assessments is DOD's ability to prepare realistic industrial plans. Accurate information including data on lower level tiers of supply is necessary to achieve realistic plans. DOD is currently revising the industrial preparedness planning approach to assess defense industrial capabilities to meet demands. A DOD working group is discussing, among other things, how the services should approach this integrated industrial capabilities assessment not only to address surge and mobilization issues but also those international issues that may affect competitiveness at all levels of the industrial base. This integrated assessment approach is a step in the right direction.

Integration of National Security Policy and National Economic Policy

S. 1 9 supports greater integration of national economic policies and national security policies. We support such efforts which should improve the U.S. ability to maintain a healthy and competitive industrial base. For example, this could help to negotiate and achieve the best terms possible for international agreements

We not only support DOD's inclusion in policy making discussions of broad economic issues that have an impact on the defense industrial base but also support increasing the role of

Commerce in assessing the impact of international defense programs, such as military coproduction efforts, on the overall U.S. industrial competitiveness.

For instance, in our review of the FS-X program[1] we noted that during preliminary FS-X discussions, DOD separated trade and economic issues from national security issues and did not coordinate with or pursue the views of Commerce. In our FS-X review, we supported agency efforts to establish procedures to ensure coordination and consultation in analyzing the benefits and disadvantages of future programs.

OBSERVATIONS FOR YOUR CONSIDERATION

Annual Report on Impact of Offsets

The Defense Production Act requires the President to submit to certain Committees of the House and Senate a detailed annual report on the impact of offsets on defense preparedness, industrial competitiveness, employment, and trade of the United States. OMB chairs a coordinating committee composed of selected federal organizations, which prepares the report.

The Act currently provides a formal mechanism for reflecting in the report, differences or dissenting views among the agencies on the interagency committee. That is, the Defense Production Act requires that the annual report provide a summary of the findings and conclusions and include differing views of the agencies that participated in the interagency study. However, OMB officials said that (1) including differing views in the report requires a separate study, (2) no such studies had been prepared, and (3) as a result, dissenting views have not been included in the offsets reports.

Under S. 1379, the Department of Commerce would have the responsibility of preparing the report and submitting it to the Congress. In so doing, Commerce must consult with the Secretaries of Defense, the Treasury, and State, and the United States Trade Representative. Each report would be based on interagency studies concerning the cumulative effects of offset agreements on domestic defense productive capability and the domestic defense technology base.

S. 1379 would provide that alternative findings or recommendations may be included in the report if the Secretary of Commerce has been given, during preparation of the report, an independent study or analysis on which such views are based.

---

[1] GAO/NSIAD-90-77BR; U.S. Japan Codevelopment: Review of the FS-X Program.

We believe that S. 1379's proposed amendments to section 309 of Defense Production Act should be changed to better provide for the disclosure of significant dissenting agency views. That is, agencies who participated or consulted in the development of the report should not be required to perform additional studies or analyses to have their significant dissenting views included in the report. In the past, such views have not been provided and agency differences regarding study methodologies and assumptions that may have significantly affected the report's conclusions have not been included.

Shortly, we will release a report on our evaluation of the 1988 Offsets in Military Exports report. Our report includes information on the interagency process used for preparing the offsets report and, as discussed above, the need for the Defense Production Act to better provide for disclosure of significant dissenting agency views in the report. Our report also states that the methodology used to prepare sections of the report allowed an assessment of the overall impact of offsets on certain industries. However, such an aggregated analysis did not allow the identification of the impact on particular suppliers or segments more narrowly defined.

The Defense Production Act Fund

Although we support the need to enhance the title III programs, we have several observations regarding the Defense Production Act Fund. For example, the national stockpile planning approach is being modernized to meet the current and future military needs. Stockpile managers are concerned that acquiring the initial $200 million from the national stockpile could have a detrimental impact on their program. Another concern is the potential obsolescence of stockpiled material. S. 1379 provides authority to stockpile not only critical commodities, but also components and subassemblies in sufficient quantities to meet mobilization needs. Rapid technology developments could make such goods obsolete. On numerous occasions, we have expressed concern regarding excess items which the government has purchased and stored only to discover that they are no longer useful. Thus, managers of any program of this nature must be very selective in the components that are included. In order for managers to be selective, accurate information on defense needs regarding components of manufacturing for which we are foreign dependent is necessary.

NEED FOR ACCURATE INFORMATION ON FOREIGN DEPENDENCY

We believe the Committee may want to consider a few other matters for inclusion in the Defense Production Act. A tool basic to our Nation's ability to accurately assess the health of our defense industrial and technology base and ensure that critical capabilities are accessible is adequate information on selected defense industries that support major weapon systems, including critical subtier industries.

In recent years, a number of studies have surfaced an increasing concern about a growing dependence on foreign sources for materials and components for our weapon systems. Although evidence of DOD's foreign dependence for critical items in certain weapon systems exists, it is not possible to measure the overall impact or extent of dependence because DOD has no reliable system to identify foreign dependence in parts, components, and technologies essential to defense production.

DOD's current ad hoc approach to defense industrial base data collection and analysis can only provide information on general industry sectors and foreign dependencies through special studies We believe this ad hoc approach is inefficient and of limited effectiveness for several reasons. First, it provides only limited visibility into foreign dependencies at lower subcontracting levels even though, according to DOD, these levels are a major source of technology development in the United States and where we face a significant decline in industrial competitiveness Second, the ad hoc approach does not facilitate the identification of acquisition strategies that could put DOD in a proactive position to know which domestic sources need to be maintained for particular items and know to most prudently exercise its authority to award contracts noncompetitively when necessary to maintain domestic production sources. Third, the ad hoc approach does not shorten DOD's decisionmaking process for acquiring weapon systems, subsystems, and components by facilitating market research as a more systematic approach would. Systematically obtaining information would improve DOD's ability to identify potential sources for important items and technologies DOD officials stated that reliance on ad hoc data collection using varying methodologies, puts DOD in a reactive role and limits its ability to identify trends in critical industrial sectors.

In general, we believe that an improved approach to defense industrial base data collection and coordination especially at the subcontractor levels of production is necessary for DOD to properly plan and be in a position to take appropriate action regarding the industrial base including the economic, trade, and technology security implications of procuring items and components of major weapon systems from foreign sources. An improved approach to data collection and coordination would also enhance DOD's ability to make prudent decisions about the National Defense Stockpile and offset agreements with foreign countries that may adversely impact the defense industrial base. Our report Industrial Base: Adequacy of Official Information on the U.S. Defense Industrial Base, (GAO/NSIAD-90-48) addresses this issue in detail.

Mr. Chairman, this concludes my statement. Attached are the responses to the questions you specifically requested that we address. I will be happy to respond to any additional questions you or the other members of the Committee may have.

RESPONSES TO COMMITTEE QUESTIONS

The committee requested that we address the following three questions:

Question 1: Do you believe that current systems for gathering and assessing data on the extent of foreign dependencies among prime contractors and subcontractors of defense materials are adequate? What changes in our current assessment policies and practices would you recommend, if any?

GAO Response: No, DOD has no reliable system to identify foreign dependencies in parts, components, and technologies essential to defense production. Some efforts underway are intended to systematically collect and analyze industrial base data including the extent of foreign dependencies.

These efforts have been slow in developing, and we believe that more emphasis and resources should be given to put in place a fully operational integrated system. There may also be a need to clarify DOD's authority to obtain data from contractors and subcontractors that is critical to accurately assess the defense industrial base capabilities.

Question 2: Do you have concerns that foreign companies might become the sole source of certain equipment or technologies vital to our national security?

GAO Response: Yes, we do. While recognizing that the U.S. defense industrial base exists within the context of an increasingly globalized economy in which nations are interdependent and expectations to rely exclusively on U.S. production capability are not realistic, the continuing availability of necessary items and technology is crucial to national defense needs.

Although, we must accept foreign sources as a way of obtaining, in some instances the best product at the best price, it is important that we monitor this trend closely. Currently there is no systematic or integrated method for assessing import dependency for items and technology critical to national security. Moreover, the military services do not have an integrated system to assess the ability of the defense industry to supply its needs for future conflict situations.

Question 3: Do you believe the federal government should make greater efforts to foster their development of domestic-based defense-related technologies either directly, through funding programs, or indirectly through encouraging joint industry cooperation or compulsory licensing of foreign technologies?

GAO Response: Yes, we believe that the federal government should make efforts to keep key defense-related manufacturing and development in the United States. This requires identification of key defense-related industries and technologies and accurate information to assess their health to decide which are in most need of government attention.

Question 4: Do you believe that current mechanisms to facilitate the transfer of high technology defense research into benefiting civilian related technologies are adequate? What policy changes, if any, would you recommend?

GAO response: Although we have not performed evaluations on this issue, and cannot comment on whether current mechanisms are adequate, we understand that there are some initiatives underway. For example, an industry consortium is being formed to share unclassified military research developed by the Air Force. In addition, the Office of Technology Assessment is in the early stages of a study which will address this issue.

The CHAIRMAN. Very good.

Let me begin by thanking all four of you for the care and the time and the effort that's gone into preparing what are really excellent presentations and also for the professional commitment over a period of years that enables all of you to come as expert witnesses on this subject.

I am profoundly struck by the importance and the seriousness of what we are discussing here and what the real meaning is down the road—5 years, 10 years, 20 years—and how we all are stewards whether we are in the public or private sector or a mix back and forth—that we are stewards of the future in terms of decisions we make today.

I am struck by the very serious tone and the sense of urgency that all four of you reflect in various ways. Some of you actually used that word from time to time in your presentation or words that are similar to it.

I want at the outset to try to sort of establish the larger framework in which I think we need to address these questions and then I want to go back down to some specific questions that come off your testimony.

To try to sort of collect the problem in a larger way so that the public can understand it, I want to ask you to try with me. If you were to extrapolate the trendlines now that you see us riding into the future, the ones that you have been talking about today, basically our strategic ability to produce, the financial arrangements that surround that, the whole way in which we've geared ourselves to head on into the future here, when you look at those trendlines, which each of you have expressed concern about, if we stay right on the track we are on now, and if we don't make any adjustments and we just let those trendlines go out into the future and let the rest of the world do what it's doing and we continue along the paths we're on, I think it's fair to say you all see that as unacceptable and in fact dangerous to do. But I want to try to get some sense as to what risk is really attached to that or how dangerous it is.

On a scale of one to ten, if ten is a very serious problem and one is a very minor problem, how important is this when you take it all together? Where are we on the scale of one to ten in terms of the importance of really finding a strategy that really changes these trendlines? And if we should not do so and we take the consequences that come with that, how serious is that? Where are we? Is this an eight on a ten scale or a nine on a ten scale in terms of our future?

Let me just go right down the table here.

Mr. GANSLER. I think I would place it very, very high, not in terms of the current position but in terms of the rate of change.

The CHAIRMAN. That's why I said trendlines. Where are the trendlines taking us? Help me with a number here.

Mr. GANSLER. Well, you have to address the problem in two different directions. One is the impact on national security and the other is the impact on the national economy and they are obviously strongly interrelated.

But if you look at each of the trends, if you look at it in terms of defense, what you see is the rising cost of equipment and the very long time that it takes to deliver that equipment, and the problems on the supply side, the industrial base if you will, of even getting equipment. And as Mr. Schwartz particularly highlighted, many of these problems are at the lower tiers of the defense industry, where we have growing foreign dependency and vulnerability.

Now if you take it from the national competitiveness viewpoint, today the economy appears to be in pretty good shape, but all the trends are overwhelming—in terms of critical technologies and even finances, as you know.

So it seems to me that if you project those trends just a relatively few years ahead that the Nation is in very serious problem—in terms of critical technologies, like electronics.

So I would put it extremely high, and the need for action in both areas very high, but because they are interrelated—thus, a set of actions that recognizes the interrelationship is critical. If you solve defense alone, you could easily wipe out the economy.

The CHAIRMAN. Well, it sounds to me like you're saying—I need a little bit of shorthand here to move on.

Mr. GANSLER. Ten.

The CHAIRMAN. So you see it as a ten. That's pretty direct. General Marsh?

General MARSH. It's ten on mine, Mr. Chairman. As I look at the trends, I see just over a short period of, say, 20 years or so we've lost completely the commercial electronics market to the rest of the world. I've looked over the last 10 years to see if what I would define as our high-tech trade should be a deficit or surplus. It was a surplus at the beginning of this decade and it's $12 or $13 billion negative now.

So that says that we are losing our technological leadership in the world and as you lose that you lose the fundamentals of your competitiveness. I say it's a ten.

Mr. Schwartz. I agree with some of the former speakers. I think it's twelve or thirteen when it comes to electronics. I think it may be eight or nine when it comes to aerospace and I think there's an important distinction there because if you look at aerospace, for example, one has to question in a competitive environment that we operate in, why is it that Japan is willing to invest money to build an FS-X fighter, for example, when a cheaper, better, smarter version is available to export from the United States. There must be some national purpose driving them to develop that capability, not for defense purposes.

The same thing is true with this examination now where if you look at the combination of their having an accommodation with Boeing to build now fuselage parts for commercial aircraft, their investment in money having to do with the SST for the future.

What I'm suggesting is that we are competing with forces overseas that have the ability and the capability of very long-term vision as against the very short-term vision in the United States. In the past when that long-term vision and industry and energy has been concentrated on industry after industry, we have seen the loss of that capability to the United States.

So I think that over a wide range it's somewhere between eight and twelve and thirteen on your scale of ten.

The CHAIRMAN. Mr. Math, would you venture a response to that?

Mr. MATH. Sure. I think in terms of the need for information it's a ten. I have no doubt in that area. But it's difficult for me without the information to talk about foreign dependency and vulnerability. First of all, we have to determine what the foreign sources are, are we dependent on those foreign sources; and then how vulnerable are we in terms of whether it's surge and mobilization or technology. So I think the need for information, the need for action and the concern on technology transfer and such I would put in the ten category as well.

The CHAIRMAN. Let me just show you a chart here. This relates importantly to what we are talking about. This is a chart that shows in the aggregate how well we are doing versus the rest of the world in terms of just our net investment position essentially driven by the trade deficit. There are other charts that lead up to this, but this is sort of the balance sheet in terms of what's been happening.

It's very stunning. If you can see here, the series of numbers actually start in the late 1970's and you can see up until the mid-1980's we were still a creditor nation, which in a sense was a measure of the fact that we were doing pretty well competitively. Then you can see the extreme rate of descent where we drop off in the late 1980's and now coming up to the present time on this chart we've posted up through the third quarter of 1989, it's a phenomenal change in circumstance for the country.

We're adding international debt right now at the rate of about a billion dollars every 3 days. Japan, for example, if it runs something on the order of a $60 billion trade surplus takes $5 billion a month net out of our economy. And when you start working down in to the puzzle in terms of what kinds of items are made up here and the move toward high value added items and sophisticated and technologically advanced items, it's even a more serious story. It's not being driven by a simple sort of first dimension type product deficiencies. We're losing out increasingly in the very sophisticated kinds of things, all of which you have talked about and which you represent today.

I serve on the Finance Committee with Senator Heinz and so we have the chance in that committee to look at the tax side of the puzzle in terms of R&D tax credits and depreciation rates and things of that kind, including just tax rates generally.

I spent 12 years on the Commerce Committee here in the Senate and so you get to look at another slice of the puzzle. And here in the Banking Committee, with the jurisdiction of the Defense Production Act, we actually are the committee with the jurisdiction of understanding of whether we are in any kind of an overall financial and economic jeopardy because of trendlines we're riding.

So in a sense this committee actually has the opportunity to take a more encompassing view.

I also serve on the Budget Committee at the present time and so we see it there.

What I'm struck by is the fact that we've so divided up the jurisdiction within the Congress that there is no place that it's easy to collect the problem. We collect a piece of it here. The Arms Services Committee obviously has a very important set of responsibilities but right now they are sort of tangled up in terms of how you take and rationalize the defense budget. If the spending levels are going down where do the cuts come from and so forth. There are a whole set of driving factors that aren't necessarily connected to perhaps the broadest possible view of how we want our position to look in terms of our economic and military strength 5, 10 or 15 years down the road.

So it's very difficult. One of the reasons we have such a hard time even focusing an intelligent discussion is that we are sliced into sectional areas of responsibility here so that it's very hard to collect enough of the story in one place to integrate it into some meaningful whole.

That's an important fact. It's not a well understood fact. People say, well, if it's so important, why don't you do something about it? Well, it's not that easy because the centers of responsibility are all over the lot.

Also, I think it's fair to say that it's very hard to get the public's attention on this issue. When I look at the press coverage that the Trump pending divorce case has gotten or even the case of this little girl that's over in New Zealand now, it really gives you an illustration of the fact that so much of the news coverage is now of an entertainment sort. So we see enormous attention paid to things that are I think of very passing meaning and relevance, and very fundamental things that relate to our economic future are things that are very hard to get public attention on, and it's very hard to get the press to focus on quite frankly. It's one thing to get five or six paragraphs in the back section of the financial section of a major newspaper, but to punch it up on the front page is a matter of major national concern requiring debate now, serious judgments, serious choices and so forth. It's very difficult to get that kind of public focus on these kinds of questions. That's another whole subject as to why that is so, and I'm afraid the news business has moved into sort of an entertainment medium to a very large extent. You see vast fortunes being built up in the cable television area and so forth, and it's just an odd set of things that drive the question of where the news focus is.

So we have a very hard time as a nation getting hold of enough coherent information about our future to be able to really think about it. Citizens have a hard time. Senators have a hard time. I think even Presidents today have a hard time because they've got a lot to do. If you watched the Tom Brokaw piece last night, George Bush, a great guy, very busy, a lot goes on each day, and it's a little of this and a little of that, and it's not easy to get big cosmic questions like this focused even for the President of the United States.

All of that is by way of getting to the dilemma that I think serious people face in the question of how do we frame this thing, how do we capture this problem, get it into some kind of understandable framework, get it up to the level of ten in terms of urgency and awareness, push it out there so that we deal with it while we still can and we don't wake up 5 or 10 or 15 years from now and find out that we missed the turn because we were too busy paying attention to the wrong things or to things that really didn't matter very much and we missed the things that were fundamental to our future.

So the committee here intends to develop not only a package off your recommendations and others with respect to the Defense Production Act, but it is our intention to take that as a subset in a larger context and that is the question of the overall U.S. position in this new global economy. If we're sliding backward, as I think we are and as you testified to in a number of critical areas, how do we stop that slide and turn it around and get back into a leadership position?

There's a piece in the paper today—we put out a news summary each day in this committee for the members on all of the major news stories that run each day that fall within the general scope of this committee's work and we cover a number of financial areas here, and there's a piece today—I haven't had a chance to read it—in one of the journals by a theorist and somebody who is an idealogue who says in effect it isn't really important that we're number one. In other words, we've got to get off that notion and if we start to think about picking winners and losers and industrial policy and government getting into the act, that somehow or other we're going to be so contaminated by just the sheer act of that government contamination that we've got to shy away from that and not get upset if we're not number one here and number one there in this or that field. I find that really dangerous thinking if what we want to do is preserve our living standard and our values and our ability to safeguard ourselves in the future.

So it helps illustrate the nature of the problem we have. You got some of it today just in the comments initially because there is a certain philosophic antagonism on the part of some—I don't mean just here but generally—about the notion of Government having any part to play in any of this, the feeling being that if you fellows who are in the private sector can't sort it out and do it right—well, the presumption is the other way—that you can and that if government comes in it will be a contaminating influence and it's just better to keep the Government out.

I want to set the stage for getting into this because if we don't have some way for people to track this other than the experts being able to track it, then we're not going to get the broad public interest and debate.

I think if you look at the long history of the country, we started out as a country with a great suspicion about government, certainly central government. I mean this country was formed in a sense to get away from kings and dictators and others who run the show. So all through our system you see this skepticism about government and very often an antagonism to government and there's a great tension that exists between government and the private sector, and it's just part of the whole history and essence of this country.

On the other hand, when you look at efforts like World War II where we had to mobilize, if you look at the space program, and if you look at our defense programs, and if you look at what we've done with government support in agriculture and a lot of other things, a number of our phenomenal successes have come when business and government have gotten together in a joint mission and we really work as a team, which in theory is what it really ought to be all about anyway, figuring out how we have that kind of teamwork.

I think during the decade of the 1980's President Reagan, a person who had broad public support, nevertheless came in with enormous skepticism about government. In fact, in speech after speech, he would often say government was really the enemy, that if government would just stay out or not involve itself that somehow or other we would get a better outcome. I think a lot of that viewpoint is still around and I'm concerned about it because I think that if we don't get past that idea and understand that we've really got to have some national teamwork here if we're going to produce an economic surge, that countries like Japan will continue to laugh at us, as I think they are today, because we can't pull ourselves together very effectively. Other countries like West Germany that have made an enormous surge since World War II are going to continue to find that our strategies here are so inept that they actually help them accomplish their goals.

So we are in this ironic situation where in many cases our inability to think together and work together effectively in a sort of a team America concept is really handing the game to the other side. I don't say the other side in that they are not friends, but their interests are different than ours, and they're going to take care of their interests and not ours, so the responsibility of looking after ours falls to us.

That's the general problem that we find ourselves in right now. So how we go about moving that set of observations and conditions up on the radar screen so it becomes a ten on a scale of one to ten in terms of public attention and urgency is really the requirement that we have.

I'm racking my brain myself to figure out how we do that. How do we go about collecting this wisdom by experts like yourselves, getting it into a form where it has some news value. If it's not seen to have news value it's like the tree that falls in the forest that no one hears. It's ironic because this is what people need to get a sense for, and this is what the young people in the country need to understand if they are going to have much of a future, much of an economic future or even a national security future.

With that all said and with you having given your own assessment as to what you think the urgency of this is on a scale of one to ten, let me go into some of the specific questions I think are important for us to pursue in detail.

Mr. Schwartz, on page 4 of your testimony you say as follows:

> The Government needs to systematically collect and analyze data related to foreign ownership and foreign dependency. It is one of the astounding facts of the computer age that the U.S. Government does not know the extent of foreign penetration in our defense marketplace and the degree to which we depend upon foreign suppliers for our key materials.

I absolutely agree with your description. To me it's an astounding fact too. I'm wondering if the rest of you agree with that and if it concerns you, what kind of legislative provisions should we adopt to fix that problem—I mean to fix it? And I'd take whatever thoughts you could give me now and if you want to elaborate for the record, I want you to feel free to do that too. But let me just see who might have some suggestions here. Mr. Gansler.

Mr. GANSLER. It seems to me that you have to start by defining what are the critical technologies or industries that you are interested in, because you can quickly get into such an extensive and long list of foreign dependencies—we're not going to eliminate a globally interdependent world today, or in the future, and we don't want to do that.

Therefore, what I would argue is we want to start from some clear definition of what we define as critical to the United States, and I would argue it's probably down at the subtiers—in the technology levels of semiconductors and supercomputers and new materials and manufacturing technology equipment and so forth.

In those areas, I do believe that what Paul was arguing for, a far greater visibility, is absolutely essential and we do not have that today.

The CHAIRMAN. You mentioned four specific ones just now. Would those four be on your list of things that we should start with?

Mr. GANSLER. Yes. I would establish criteria for establishing that list so that socks, shoes, and underwear do not also end up on the list—because the soldiers wear them. And there's a very real danger, as you know, politically, of that happening. Therefore, one has to sort out, objectively, and assess what is critical; and I would argue it should be in terms of "defense essential". It should be in terms of high technology. It should be in terms of those areas that are vulnerable.

The CHAIRMAN. But there are some that are obvious right now, even without setting up the criteria. There are some where the red lights are flashing.

Mr. GANSLER. And even in those areas people have started doing vulnerability analyses to prove it, if there are still skeptics.

The CHAIRMAN. What are in the obvious flashing red light categories? I want you just to go back a minute. You mentioned——

Mr. GANSLER. Some of the electronics areas, semiconductors and some critical next generation electronic equipment, and software, supercomputers, next generation materials and manufacturing technology—I would put that very high on the list.

The CHAIRMAN. So those are very specific. Those come right off the top of your head.

Mr. GANSLER. What's interesting about those is they are essential not only to defense but to national competitiveness. The overlap is enormous.

The CHAIRMAN. General Marsh, what's your thought on this?

General MARSH. Well, I concur pretty much with what Jack said. The Defense Authorization Act of 1989, as I mentioned, did require the services to do a study of one system each and to start to get at this problem. My checking indicates that that analysis is now underway. I surely accept Mr. Schwartz' point that we've got all the computer capability to track our components and so on, so we ought to be able to know where they are coming from.

Identifying these so-called critical dependencies is the key, as Jack said.

The CHAIRMAN. Yes. Let me ask your thinking on that specifically. As you sit here right now—you've lived this pretty much your whole life—what are the obvious sort of flashing red light areas that we know right now we need to be tracking?

General MARSH. One of them is the underpinning of the microelectronics industry. When I say underpinning, I'm talking about the manufacturing technology that underlies the microchips and read-only memories and so on. It's one thing to produce the chips here but we no longer have the, capability to produce the underlying machine tools. The machine tool industry of the microchip industry has departed and that portends a terrible future for microelectronics. Once you lose the manufacturing technology, for sure you're going to lose eventually the microelectronics capability itself.

That's such a pervasive capability to all commercial and military hardware that it's of fundamental importance in my judgment.

The CHAIRMAN. What else would be in that category that comes to mind?

General MARSH. I would broaden it out to manufacturing technology of other capabilities, machine tools of all kinds, numerically controlled, advanced robotics, and so forth. Again, it's the underpinning of our manufacturing capability that's departed.

The CHAIRMAN. And when you put what you've just said against this broad philosophic rough-hewn debate that goes on about picking winners and losers, what goes off in my mind when you say that that debate is irrelevant to your point. In other words, if you want to be a winner as a nation in the future, you'd better make sure you're going to be a winner in this area, period, no matter how it gets done. If the private sector will do it, all well and good. If the private sector can't do it, then you need a stronger effort in the national interest with some public-private sector mixture of strategy and so forth. If you want to be a winner as a country in the future, you'd better make sure you get that one done, period, and not get hung up in a philosophic debate about it.

General MARSH. I agree, Mr. Chairman. I think SEMATECH was a good example. I served on that defense science board task force that arrived at the conclusion that we ought to have a SEMATECH. But there, the rationale was that it was, again, the manufacturing capability, the lithography capabilities, the advanced x-ray capability, and so on. We didn't have that capability any longer in the United States and we concluded that it wasn't in any individual manufacturer's interest to go do that himself, to invent the machinery that would allow him to make and manufacture microchips. Consequently, it's in the national interest for the Government to intervene in a situation like that.

The CHAIRMAN. Mr. Schwartz.

Mr. SCHWARTZ. Senator, rather than go through a list of the critical industries because I think intelligent people can put different priorities on different items and that's going to be a test itself, I think it's very important to recognize that we should not get caught up in the process of how to while the barn is burning. I think we've got to get some water onto the site immediately and throw it on the barn doors.

I'm struck with your suggestion I read the other day that you would like to see come out of these committee hearings a crash course response so that we're not involved in a very long process legislatively or governmentally.

The CHAIRMAN. Because we're late already. That's the problem. We're so behind the curve that if we debate, process and debate structure and debate this and debate that, by the time we finally respond we're going to be even further out of the game in my view.

Mr. SCHWARTZ. If I were to suggest one item that I would in the process be concerned about, I would be concerned about the cost of capital in the United States.

When you look at the fact that in Japan, for example, the stock market by virtue of the fact that it has a four or five multiple of earnings per share multiples related to the New York Stock Exchange means that the cost of raising capital in Japan is 25 percent or 30 percent of what it is in the United States. Their direct interest rates are half of what it is here.

So I would suggest and I would like to take advantage and impose upon this committee the fact that the chairman has multiroles in tax areas and other areas, I would like to see some specific suggestion, for example, that if stockholders in the United States could get some relief in turning over their investment in high tech companies that have become successful and are large and are able to reach capital markets on their own now, if they sell those investments without having a capital gains tax, if they invest those same sums in new emerging technologies and have the cost basis from a tax point of view, just delaying a tax liability——

The CHAIRMAN. It's the same thing we apply if somebody sells a house and buys another house.

Mr. SCHWARTZ. Yes. And that is an incentive for rollover, freeing up of capital for emerging industries. I think that the cost of capital is probably the most striking thing that we have to be concerned about—not the only one, but a very striking thing.

I think we have to have strategies in this country that allow for investment in emerging technologies, not only defense but otherwise as well.

The CHAIRMAN. Mr. Math, would you like to put anything on the list that you think is sort of a flashing red light area? The debate really should end and we should select some items to track right now.

Mr. MATH. I don't have anything to add to that list. I would reinforce what was put on the list such as manufacturing technology and computers and those type of items.

I think it is imperative to reinforce what Jack was saying, that the last effort that was performed to identify critical industry came up with 215 and I think what we're looking for is a combination of what Jack and Bernard said and what you said, Mr. Chairman, that we need to identify those flashing lights and act accordingly and throw the water on the fire.

But I don't think we can address 250 so-called critical industries because I don't think that number is obviously that high.

Mr. GANSLER. Let me comment on that because the Japanese did the same thing and I'm sure some of you have read their report on technologies for the year 2015, and they had around 315 technologies that they identified and went through in very detailed fashion—much more than we, where we just identified what are the list; they actually had a plan to do something about it, which seems to be much more useful.

But then they went down from that to something like 32 that were really the critical ones that everyone in the nation could focus on and for which there would be even extra rewards. I think that's what Paul is talking about, that we can't afford to do something about all 315 but we want to track those because some of those may be the big items in 10 years, and keep track of those as well.

The difference in approach to that list is, I think, very significant; and of course the Japanese list was not just a defense list. It was a "dual use" list.

The CHAIRMAN. Let me ask you this. You have all either been at a very high level in the private sector or are now or had great contact with it. I've talked to a great number of CEOs across the country who express this very high level of concern and a real sense of urgency about this erosion of our international competitive position.

Why is it that the business community as a whole isn't just knocking down the door here in Washington, whether it's the door in the White House or the door of the Senate Finance Committee or any relevant door in Washington? Why isn't the business community in this country on a broad scale basis demanding and insisting on a higher sense of urgency and a focused response to this problem because it really isn't happening on a broad basis. Why isn't it happening?

General MARSH. I would volunteer a comment. At least from the defense industry point of view, I think the adversarial relationship that has built up over the last 10 to 15 years is so bad that the defense industry is on the defensive. I think they are trying to hold their own against a multitude of measures that seem to come by day after day, year after year, that make business even more difficult, make increases in productivity, investment decisions much, much more difficult. Consequently, I think they are really in a defensive posture.

Now, I can't speak for the industry as a whole as to why they are not speaking up; although I do read quite a bit on that. I'm not sure it falls on the right ears.

Mr. GANSLER. It's not clear who they should go to talk to. You pointed out that within the Congress there's not a coherence between the economic issues and the military issues. Well, that same conflict, in a way exists, within the executive branch. Then, on top of that, you have this "religious" debate over free trade versus what some people seem to think of as a totally planned economy—if there is any form of analysis done on critical sectors. So there's not a welcome mat out for any people to suggest such initiatives within either the executive or the legislative branch.

Mr. SCHWARTZ. If I may, we are talking about the defense industry and I can't talk about industry generally, but in the defense industry General Marsh is exactly right. I think industry leaders are in a state of shock. We've gone for a period of 6 or 7 or 8 years where every relationship with the Government has been a negative one, a negative one for industry—super regulation, investigations, extraordinary cutback in support. There has been a public assault on the image of the defense industry and defense leaders in the industry I think are in a state of shock and are losing their ability to be leaders in the general sense.

I think that we need to get away from the adversarial role and begin to recognize that there are patriots in the defense industry like there is in any other industry and their views should be looked at regularly.

I think also, with all due respect, there is an ideology in this history of this government that you alluded to before and there's a skepticism in the business community that when government gets involved bureaucratic structures become imposed and decisions become stretched out. But I think it's easy to find a middle ground here and be constructive and I hope your efforts and the committee's efforts in that regard continue.

The **Chairman**. The thing that's so distressing is that the changed nature of the world economies come on so powerfully and really quite rapidly as we measure time and, as that chart shows, in terms of the reversal of our international economic position. So it's so difficult for a country that's used to be riding on top with sort of standard kind of an effort to suddenly have to cope with the notion of finding that something different is needed and even something that may be sort of alien to what our normal impulses are. All of the comparisons that have been done between the Japanese approach and the Japanese model and what's created their success or even the German model, which is different but highly successful since World War II, have ended, and so have the lessons we can draw from these comparisons in terms of how we engineer a surge in this new competitive arrangement. It's a very, very difficult process because it involves this self-examination and the change in certain behaviors we have become accustomed to, even addicted to, part of it being the adversarial arrangements that are all over the lot right now. In fact, most of the stories you read about are of a negative nature rather than along the lines of what we are doing to figure out how we can make something positive happen or work together. It's a real dilemma.

I was reading the other day, if I remember the numbers right, that in our society now we have one lawyer for every 270 people and that seemed to me like a lot of lawyers for the population. I don't know what we have in the way of brain surgeons or physics teachers or other things, but I think it's again partly the nature of the way in which we have been able over our 200-year history to have one kind of lay of the land here and enormous natural advantages in addition to our philosophy which has worked so well for us and our free market philosophy and what have you in terms of having plenty of oil and having oceans separating us from some of the other international conflicts.

But now somehow we're going to have to get this sense of urgency out there and across to the country and we've got to make a sharp turning about and we've got to have the debate, but we can't debate for 10 years or the adjustment won't be a very relevant adjustment. We are already late in a sense. If we had really been smart, we would have done something back here when we started to see what was going on here to say, wait a minute, we don't want to be down in this zone. We don't want to ride this curve, so what can we be doing here? We still don't have a relevant strategy. I have never even seen this chart in a major national newspaper, just in terms of somebody going through the newspaper from the front page and the Trump story through to how the NBA teams did last night where someone might hit upon a chart like that somewhere in the newspaper, they can't find it because it isn't there. I don't know how we somehow create the news value.

In terms of the splits in the Government, there are splits in the Government and we have talked about some just in terms of jurisdiction. We do have a President of the United States and he's a hands-on President and he's a smart guy and he wants to do a good job and one place where the business community should go today is to the White House and to knock on the front door and ask to sit down with the President—a cross-section of serious business leaders—and talk about this problem. I mean really talk about it because if this President doesn't figure it out at some point, whether in one term or in two, he's going to find that he's going to go down in history as having missed the turn as well. You will be doing him a favor and everybody a favor if that happened.

I'd like to see the business community do that, not just the part that's in the defense area that rests upon our manufacturing capability, but people outside the defense area but also very much involved in the manufacturing base of this country. They certainly would be working allies who share this concern. They tell it to me every single day. That's the group that ought to be down there asking to get in, whether you come in behind the 49ers or after the 49ers, the important thing is to get in and have a serious discussion. I think this is a President that you can talk to and who will think about this, but not if he's not confronted with it. I'm not sure internally his staff is going to walk in and say, "Mr. President, there is this erosion of the U.S. competitive position and talk about bold strategies for turning it around. I'm not sure it will come that way. I think it's going to take some real hitters out of the private sector who are dealing with this every day coming in as a broad-based group, people from the electronics industry and others. I don't think it should just be defense industry people. I think you're right. There's been a history in the last 10 years and there will be the whole question that this is just self-interest with the cold war ending and the Berlin wall falling down. Really try to get these views focused. So that's one place to go.

I also think that group could make some stops here on Capitol Hill. There are committees, even though the jurisdictions are split up that are the important and relevant committees. The way the Congress works, if something is put right square in the middle of the radar screen and forced to listen, we tend to deal with it. But the private sector can't fall victim to some of this hubris either of saying, well, government is a pain or government is the enemy. The Government is us and we are going to have to think in terms of team America whether we like it or not or else we're going to have our clocks cleaned by team Japan or team Germany and team Taiwan and team Korea who are cleaning our clocks today.

So I'm not quite sure how we go about getting that done in the private sector. We're doing some things to get it done here in terms of figuring out how we cross-connect the pieces so that we can at least get a coherent framework and capture the problems so we can aim a package of answers to that problem. We're going to do that in this committee. We will produce such a package, even if parts of it fall within the jurisdiction of other committees which would obviously be a suggestion that they act on that part of it.

But somebody has got to put together sort of a wall-to-wall definition of the problem and a proposed solution to it. But the private sector has really got to get into the act here and I'm not quite sure—maybe you've got some more ideas on that.

Mr. **Schwartz**. Just one quick observation. I think that my own personal experience might be useful. Business people are suspicious that efforts in trying to educate the Government or the White House or whatever is a long-term, almost fruitless exercise. I don't think that is necessarily true, but I think that is the general suspicion.

This is the second time I have ever appeared before a congressional hearing. I would not have come here today except for the personal request from yourself. The fact is it was a very rewarding experience, and I do feel that there is a response, and it's this kind of dialog that I think is very important to get more and more business people to come into the framework of a dialog.

I would also hope that the efforts that you and your colleagues make are not only at the Iacocas and the Roger Smiths, but you have to get into the second and third tier of individuals because they also are centers of influence and can marshall public opinion.

The **Chairman**. Right, I agree with that.

Mr. **Schwartz**. There is a serious question, and I don't think anybody in America really is as comfortable about our industrial strength as we were 10, 15 or 20 years ago, and there is a great concern about what to do about it.

The dialog has been very helpful, and I would congratulate you and if you could continue to bring people like myself into the process I think it would be helpful both ways.

The **Chairman**. I appreciate that. I want to cite something that happened last year. We had these five hearings last year. Now they didn't get a lot of attention because the savings and loan issue was in here and we had to get that done and it got a lot of attention and so forth.

But think about this for a minute. We had John Reed from Citicorp in here talking about these issues from a financial services point of view and he made many of the same points, albeit sort of through the perspective of somebody who is a world class player, our largest American banking institution on the international scene.

We had Bobbie Inman in here who was able to speak about these same kinds of issues from his vantage point as having run the CIA and now of course having gone out into the private sector.

We had people like Frank Carlucci who testified. We had Galvin come in and testify. We had some Nobel Laureate economists come in. We happened to have bad weather that day, and I guess one was in an automobile accident and didn't get here. But we've been able here to hear from really renowned persons who can bring enormously relevant, up-to-the-minute perspectives on an urgent national problem, and I think the most urgent because we could talk about what we want to do in AIDS research or how for the homeless people to get all the folks off the hot air grates here in Washington or how we are going to beef up education, and if we can't pay for it, we can't do anything.

In other words, you've got to have the economic strength of the country working for you. You've got to have that engine really pumping out the national income, and you've got to have people working at a sophisticated level of effort and you've got to have high value added work going on if you want to have high value added consumption, and if you don't have an economic system that is really moving and really strong and right up there and running even with, if not ahead, of anybody else in the world, you can talk about dealing with these other problems, but there aren't enough points of light out there to get the job done if you don't have the national income underneath it.

As this chart shows in terms of our international comparisons here, we don't have that any more. That's why we're borrowing all this money from the Japanese. Money that used to be ours we are now borrowing. The money is now theirs, we've got their Toyotas and they've got the money and we're borrowing the money back.

It's interesting that of our Federal debt outstanding right now, and of course it has gone up enormously in terms of total volume of outstanding U.S. debt, and I can't give you the figure without having it in front of me, but 15 percent of it was held by foreign holders of that debt, roughly 7 or 8 years ago, and it's up to 20 percent now. But it's rising in such a way that this dependence upon foreign lending is another kind of strategic constraint.

I mean if you've got to rely on a foreign-built component to make a rocket work or to make the control system of a very sophisticated aircraft work, and all of a sudden it's not there, it's there at a price that is prohibitive, or you can't get it at any price, all of the sudden you've got a real problem. The same thing is true with capital. If we were relying on foreign capital and it either isn't there or it's there at too high a rate, you're out of the game.

So these constraints that are pressing in on us, it seems to me, are putting in jeopardy all of the things that we've earned over 200 years. I mean the professional accomplishments of yourselves and everybody else in this country that has gotten us up to a certain point of achievement are now really at risk, and I mean at very profound risk. And yet we don't seem to be able to somehow get that point of view across to ourselves as a country and kick off a serious debate about a major economic adjustment strategy that has now got to go on.

I must also say this, that I think that the ending of the cold war in a sense, as welcome as that is and as important as it is in terms of the developments in Eastern Europe, I think also could have the effect of deterring us from having the kind of serious focused discussion on how we rationalize our economic system and make it stronger for the future.

I see the potential here to take this in such a way as to say that well now the Government even has less a broad national concern, a broad strategic concern and the Government can back out a little more and we'll let the private market system work, and the private market system that may be working is the success of a Japanese company and a Taiwanese company and a German company, and I don't aim this at any particular nation, but without the corresponding growth of strength here at home with companies that are producing their wealth in this country and the jobs and the economic strength here.

So we're going to press ahead here, and you're coming today and engaging in this kind of serious discussion is critical to us being able to put our work product together. I hope to do it on a bipartisan basis. I have lived in both parties and I think we do better if we do things on a bipartisan basis than getting split up by parties. I hope we can and I think we can because I detect generally across both party aisles a rising level of anxiety and apprehension about these trend lines and the danger to the future.

I want to pursue just one or two other questions here and then I think we'll finish with that.

I have a question that I'm going to ask you to respond to, and that is as we also become more dependent upon foreign suppliers for key components or for items in our military arsenal, is it important for us to distinguish between countries in that area, or are there buildups in specific countries or areas of the world that add another dimension to that problem that we should think about? In other words, how should we go about envisioning that?

For example, in the case of Canada, and Canada is in very large measure a part of our industrial base now, we have got the Free Trade Agreement in place and so forth. So they would seem to fall into a somewhat different kind of category as nearly as we could tell. But with respect to the rest of the world, are there other concerns that we should be thinking about with respect to where our reliance and critical items may be piling up to too great an extent?

Mr. Gansler.

Mr. GANSLER. I think one important distinction we need to make is between a dependence and a vulnerability. The fact that we get parts from offshore doesn't mean we are necessarily vulnerable. If we don't have a substitute or if we don't have the ability to do engineering work in that field or don't have, as Tom said, the manufacturing tools to do work in that field, and if we are dependent on a single country or particularly a single company in that country or multiple companies in that country—two or three—then we are much more vulnerable.

It's in a lot of ways analogous to the antitrust considerations that we've historically used domestically, where we've asked what share of the total market is controlled by four firms in the United States. Well, you can try to expand that model, perhaps, to consider how many countries are you buying that critical part from, and if it turns out to be one, then you're very susceptible to vulnerability from that country. Even if it's multiple companies in that country, you have the ability of that country to turn the lever on and off.

So it's more than just simply saying today I'm buying my part from country "X" and is that a dependable country. Clearly that's a relevant question, and in most of these cases these are at least military allies. So you get into other questions, that is, of economic competitiveness.

The CHAIRMAN. Anybody else want to add anything?

Mr. Math.

Mr. **Math**. Mr. Chairman, I would fully support what Jack is talking about. There are models available in the stockpile when we talk about materials and the same type of analyses are made, not only whether we get the item or material from a particular country, but how vulnerable is that country in a time of war. So I think there are models available and examples available that could be used and should be used in determining what components and assembles should also be stockpiled.

The **Chairman**. Let me just in concluding ask if any of you have any final thoughts that you want to express before we close the committee record for today? Does anybody have any postscripts?

General **Marsh**. Mr. Chairman, I have one. It seems to me that most studies have determined that the Federal Government to this point has sponsored about half of the nation's, what you might call, technology base programs. Now historically that has been the case ever since World War II. Of that 50 percent that the Federal Government provides, the Department of Defense provides about 60 or 70 percent. It has been estimated as high as 70 percent.

As the defense drawdown occurs, one has to be concerned about the support to the nation's technology base being drawn down in a proportional way. If so, it will be counterproductive to the very goals that we've talked about here today, and I think a special eye has to be kept on that particular problem.

The **Chairman**. Well, I think that's a very important point. I'm also reminded of the fact that when you think about what we've done in the space program, just this one area, and the period when we were making the trips to the moon, and we took Americans up to the moon and landed on the moon, got out, took a look around, did some scientific work and so forth and brought those people back safely, what an incredible example of, if you will, team America where government and the private sector and citizens got together with a focused assignment and in a relatively short space of time, really the period of a decade, decided that we were going to set that goal and go and accomplish it, impossibly difficult when you start out. I mean even today even though we've done it, it seems hard to imagine that in fact we did because we've sort of gotten away from that particular kind of a program.

I think there are models if we remind ourselves of them of the fact that we do know how to work together as a team. In World War II in my home town of Flint, Michigan when we had to go to war production, which we did in the automobile plants there, the nature of that conversion and the success of that effort is just absolutely incredible.

We can do these things. You know, there isn't anything wrong with the American capacity or the American will or the American ingenuity if we can get ourselves put together properly. If we can think and work as a team and define some strategic goals for ourselves, I have no doubt that we can get there.

I also have to say that if we're divided and we're going off in a lot of different directions and we're at war with ourselves and we are not setting very tough and demanding strategic goals for ourselves, we're not going to get there. It's not going to happen by accident. There is no way that the market system today in terms of the way the world works is going to move the United States quickly and directly to the goals that we need to meet. We need to sort of pull everybody together if we are going to get that done, and I think today will help us down that track.

Thank you very much for your appearances today.

The committee stands in recess.

[The committee recessed at 11:55 a.m., subject to the call of the Chair.]

LEGISLATIVE PROPOSALS TO REAUTHORIZE THE DEFENSE PRODUCTION ACT OF 1950

THURSDAY, MARCH 8, 1990

U.S. Senate,
Committee on Banking, Housing, and Urban Affairs,
Washington, DC.

The committee met at 10 a.m., in room SD-538, Dirksen Senate Office Building, Senator Dixon presiding.

Present: Senators Dixon, Shelby, Heinz, D'Amato, Bond, and Pressler.

OPENING STATEMENT OF SENATOR DIXON

Senator Dixon. Good morning, ladies and gentlemen and my good friend, the Senator from New York, Senator D'Amato.

This morning the committee continues its hearings on the reauthorization of the Defense Production Act of 1950 and S. 1379, the Defense Production Act Amendments of 1989.

This is the third day of legislative hearings on the bill and it's the sixth day of committee hearings looking at the overall health of America's industrial base and technology base which support our national defense.

The news, I regret to say, has not been very encouraging. The common themes in the testimony received from the many thoughtful witnesses with extensive experience in industry and government have been disturbingly consistent. The strength of the Nation's industrial base and technology base is being steadily eroded across the board.

In some segments, the erosion has reached crisis proportions.

Despite the brilliance of our innovators and our entrepreneurial spirit, American businesses, large and small, are too frequently coming in second place in the international marketplace.

Government has played a role in this decline through a policy of benign neglect. Many of the witnesses urge that we lack coherent governmental policies aimed at fostering the success of American firms in what can only be called a fiercely competitive global economy.

Many dismiss the notion that the rationalization of government policies affecting American business competitiveness must inevitably evolve into some sinister industrial policy, what Senator Heinz of Pennsylvania refers to as the "IP word."

Rather, they suggest that such policy choices are already being made on virtually a daily basis in the executive as well as in the Congress. Tax laws, trade policies, appropriations all help define winners and losers. Unfortunately, segments of our economy too frequently find that they've been made winners by one set of actions and then promptly been made losers by another set of actions.

Many of the witnesses appearing before this committee strongly urged that government action was not the real danger, but rather haphazard government action. They point out that American firms developing the cutting edge technologies that will assure future economic leadership are left to go it alone.

This situation is in stark contrast of course with their business competitors in many other nations. They urge that action must be taken especially to arrest the decline in defense, industrial and technology base. Continued erosion will sorely limit our ability to produce technologically superior military systems in a cost-effective way to preserve the peace or to successfully meet increased demands in times of national emergency.

Investment must be encouraged. Impediments to joint action among companies must be eliminated.

Prior witness have expressed support for the provisions in S. 1379, which I introduced with the cosponsorship of Senators Heinz, Shelby, Wirth and my good friend from New York State, Senator D'Amato.

Today the situation is likely to be different. The statements of the representatives of the Office of Management and Budget and the Department of Defense basically say that there is no need for most of the provisions of S. 1379, "We've already got the situation under control."

In contrast, the statement Tom Murrin, now Deputy Secretary of Commerce, reflects a recognition that very serious problems exist and corrective actions are needed.

As Chairman of the Defense Manufacturing Board and in other positions, he has always displayed a commendable blend of thoughtful reflection and effective action. Hopefully, he will be able to bring both traits to bear on the critical issues before us.

Despite OMB's expressions of reservation, I look forward to understanding the administration's concerns with the bill. Ever the optimist, I will continue to try to identify and capitalize on any glimmers of support for the initiatives proposed in S. 1379.

Now I am delighted to have my warm friend from New York State here and I wonder if he has any opening statement. Senator D'Amato.

Senator D'AMATO. Mr. Chairman, unfortunately, I have two other subcommittee hearings, but I would like to submit a statement for the record and ask that it be included as if read in its entirety.

Mr. Chairman, let me simply take this opportunity to welcome our distinguished witness, Mr. Murrin. He always has been very candid with this committee. And commend you for your leadership. You certainly touch on an area that I believe you refer to as benign neglect. It's an area that certainly at the least we can and I believe must do better. So I commend you for these hearings and I'm sorry I'm not going to be able to participate.

OPENING STATEMENT OF SENATOR D'AMATO

Mr. Chairman, today we hear from a distinguished group of witnesses their views on the S. 1379, the Defense Production Act Amendments of 1989. As an original cosponsor of this measure, let me thank our colleague Senator Dixon for his extraordinary and ambitious efforts to date in developing this important and complex piece of legislation, and Chairman Reigle for scheduling these hearings.

There exists substantial evidence that the United States Defense Industrial Base [DIB] is under severe strain, and has begun down a path of erosion despite a massive infusion of resources during the Reagan administration. The General Accounting Office [GAO], The Office of Technology Assessment [OTA], the Air Force Association [AFA], and the Center for Strategic and International Studies [CSIS] have all detailed this disturbing trend.

The consequences of a further decline in the DIB could be grave. Although today we witness the thawing of relations with the Soviet Union, the ending of regional conflict and the continued spread of democratic ideals, the potential for armed conflict can never be discounted. If the United States loses a significant technological and industrial capability, we would simply be unable to meet peril head on.

In the post-war period, the U.S. defense posture has relied principally upon the technological superiority of our weapon systems, rather than sheer numbers. The wisdom and effectiveness of this strategy has been demonstrated numerous times, and, of course, has always been predicated upon a general U.S. technological superiority. Without a robust technological base, therefore, the strategic foundation of our armed forces would whither away.

The Defense Production Act Amendments of 1989 will give to the President of the United States needed authority to maintain our technological superiority, and the resources to arrest any decline in our Defense Industrial Base. I look forward to the remarks of today's panelists.

Thank you, Mr. Chairman.

Senator DIXON. I thank the distinguished Senator from New York State and we are pleased to have here the Honorable Thomas J. Murrin, Deputy Secretary of the Department of Commerce. Tom, we are delighted to have you here this morning. Thanks for honoring us by coming.

Before we begin I have a statement from Senator Sasser.

[The prepared statement of Senator Sasser follows:]

PREPARED STATEMENT OF SENATOR SASSER

Mr. Chairman, today we are going to hear the administration's point of view on the Defense Production Act. From the witnesses statements, I can see that we are all in agreement about the timeliness of this hearing and the importance of the Defense Production Act. However, I also see that the administration's recommendations do not go as far as those of my colleague from Illinois, Senator Dixon.

When Deputy Secretary Murrin pointed out, "The DPA was developed in a time when the United States was the unrivaled economic and technological leader. Even then, a DPA was necessary. In today's global environment, it is even more important," I think he made a good point. It is time to update the DPA.

However, I have concerns about whether the administration bill goes far enough. Two of the most important provisions included in Senator Dixon's bill, S. 1379, the exemption of approved joint research ventures from antitrust requirements and the provisions intended to counter unfair foreign competition, have not been included in the administration package. In order for the DPA to be effective, it must be comprehensive and substantive. I will be interested in hearing the administration's explanations of why the more expansive provisions of Senator Dixon's bill have been omitted from their bill.

Over the past several weeks, we have heard testimony from numerous experts on our competitive status in the defense sector and in the developing technology. Time and time again, the dual calls for both greater Government involvement to help foster new technology, and less Government rodtape have been sounded. We have a difficult balance to strike. Yet we must act and act quickly. These hearings are providing an excellent forum for establishing the Government's role in this defense production. I commend the chairman for his leadership and foresight on the DPA issue.

STATEMENT OF THOMAS J. MURRIN, DEPUTY SECRETARY, DEPARTMENT OF COMMERCE

Mr. MURRIN. Thank you very much. Good morning, Mr. Chairman and Senator D'Amato. I am truly pleased to be here to discuss an issue which has been of special concern to me, our defense industrial base.

I have a full written statement for the record which I would like to submit with your permission.

Senator DIXON. That will be reproduced in the record in full.

Mr. MURRIN. Thank you, sir.

In addition, the Department is very aware of S. 1379 and I will try to answer questions you may have about that proposal.

In my remarks I'd like to now focus on the issue in a broader sense. The growing and technological vigorous industrial base is vital to both our military and economic security. Yet over the past decade or so America's technological superiority has diminished.

This is due in part to the vigorous efforts and success of other nations in building up their own capabilities. The international environment has changed dramatically. Both defense and commercial markets have globalized and our nation is increasingly dependent on foreign sources for a wide range of equipment, components and even technologies.

It is essential that our Government foster the proper environment and policies to ensure that our industry remains at the technological forefront and is able to exploit emerging technologies in both the defense and commercial arenas.

As stated in this administration's proposed Defense Production Act, S. 2168, it is the responsibility of the Government to "assess the capability of the defense industrial base to satisfy peacetime surge and mobilization requirements and to take necessary actions to ensure that adequate domestic production capacity exists to satisfy these requirements."

It is clear that the authorities provided by the Defense Production Act are a critical tool in ensuring the long-term viability of our defense industrial base. But defense industrial issues are much breader. The dramatic globalization of technology is perhaps the single most dominant industrial development over the past 10 years. It sets the tone for any discussion about policies regarding the industrial base.

During the past several decades, many American companies became multinational with major operations in other countries.

Their interest and allegiances, however, remained American. More recently, we've seen the emergence of truly international companies with international interest taking top priority. The consequences of these companies' decisions about plant location, hiring, R&D investments and the like on U.S. citizens and on our industrial base seem of secondary importance to them.

Markets now are global to a degree only imagined a decade ago. To be successful, companies must develop and offer products saleable in the international marketplace. And the competition is global too, of course. It's easy to focus on Japan, but the challenge comes from others, including South Korea and other Pacific Rim nations.

I commend to you an excellent recent report by the Defense Science Board on the Pacific Rim. It concludes:

> By the year 2000, the Pacific Rim, led by Japan but with others following on its heels, will be an even more dominant center of world economic power and will become a world class technological leader in aerospace, including much defense technology, electronics, telecommunications, basic components, and advanced materials.

Competition is truly global. The newly unifying Europeans should be thought of not just in terms of the size of their market but the likelihood that they may well become stronger competitors with U.S. firms for domestic and foreign markets. The prospect that the Europeans will link up with each other and with Japan is an added twist to global competition. I can think of no better example that this week's announcement that Daimler-Benz and Mitsubishi are negotiating a plan for intensive cooperation in automotive technology, aerospace, microelectronics, and service industries.

Moreover, it would be short-sighted to ignore the civilian and military technology potential of the Chinese, the East Europeans headed rapidly toward democracy, and the Soviets.

The reality of Soviet competition hit home for me recently when I welcomed a Soviet delegation visiting our Commerce Department to discuss the potential joint venture dealing with medical equipment. It turned out that the gentleman heading the delegation also was leading the Soviets' project to apply their impressive rocket systems, built up during a chillier defense climate, to the commercial launch business. They have in mind competing directly with our own young commercial launch sector by offering to launch communications satellites and other payloads from Australia.

On the other hand, there is much good that is coming and still more good that can be realized from such internationalization and specifically the globalization of markets and technologies. This trend encourages sharing the financial burden of increasingly sophisticated and costly technologies and large projects, including defense projects. It spurs the development of new emerging technologies and markets whether defense or civilian oriented. But the same globalization also carries many risks.

In the military arena, it makes it much more difficult to control sensitive technologies. It makes us, in some cases, inextricably dependent on other nations and they on us.

So, balancing the need to compete and to cooperate in an increasingly interdependent world with a requirement for a technologically strong and self-sufficient defense industrial base is one of the great challenges that we face today.

Along with our many concerns about such recent developments, there are encouraging signs for our industrial base.

First and foremost is the increasing attention these issues are receiving and our growing understanding of the linkage between our economic and military security. I commend the members of this committee for helping to bring these matters into sharper focus.

The President's recent statements and actions regarding the competitiveness challenges facing our country are further evidence of our growing commitment to this issue. For instance, I want to be sure you are aware of several key announcements made by the President just yesterday in remarks to the American Electronics Association.

He announced that the Competitiveness Council, headed by Vice President Quayle, was being given the additional assignment of finding ways that American industry can better translate new ideas and technologies into marketable products. The President also said that the administration will support legislation to reduce the antitrust uncertainty that may discourage joint production ventures.

These actions build upon already announced Presidential initiatives to reform the product liability system, to boost Government support for R&D to new record heights, and to encourage productivity gains, savings, and long-term investment in high tech industries by lowering the cost of capital.

In addition, I want to single out another very positive development. That is America's increased commitment to quality improvement, stimulated significantly by the Malcolm Baldrige National Quality Aware Process, a cooperative private-public sector undertaking that we at Commerce are privileged to manage.

We still have a long way to go. As a nation we must take effective action to ensure that our defense industrial base remains internationally competitive and that we productively exploit the benefits of technology globalization.

I thank you for this opportunity. I would be pleased to try to answer any questions the committee may have. I also want to note that my written statement provides answers to several questions the committee posed in the invitation to this hearing. John Richards, our Deputy Assistant Secretary for Industrial Resource Administration, will be available as part of your coming panel of witnesses and he's here with me to help answer any really difficult questions that you may have for me. Thank you.

[The complete prepared statement of Thomas J. Murrin follows:]

TESTIMONY OF THE HONORABLE THOMAS J. MURRIN
DEPUTY SECRETARY OF COMMERCE
BEFORE THE
BANKING,HOUSING AND URBAN AFFAIRS COMMITTEE
U.S. SENATE
MARCH 8, 1990

GOOD MORNING MR. CHAIRMAN, MEMBERS OF THE COMMITTEE. I AM PLEASED TO BE HERE TODAY TO DISCUSS OUR DEFENSE INDUSTRIAL BASE.

A GROWING AND TECHNOLOGICALLY VIGOROUS DEFENSE INDUSTRIAL BASE IS VITAL TO OUR NATIONAL SECURITY. OUR DETERRENCE POSTURE, AND OUR INFLUENCE IN GLOBAL AFFAIRS, DEPENDS UPON THE STRENGTH OF THE INDUSTRIAL BASE.

YET OVER THE PAST DECADE OR SO, AMERICA'S TECHNOLOGICAL SUPERIORITY HAS DIMINISHED. THIS IS DUE IN PART TO THE VIGOROUS EFFORTS AND SUCCESS OF OTHER NATIONS IN BUILDING UP THEIR OWN CAPABILITIES. THE INTERNATIONAL ENVIRONMENT HAS CHANGED DRAMATICALLY.

BOTH COMMERCIAL AND DEFENSE MARKETS HAVE GLOBALIZED SO THAT OUR NATION IS INCREASINGLY DEPENDENT ON FOREIGN SOURCES FOR A WIDE RANGE OF EQUIPMENT, COMPONENTS, AND EVEN TECHNOLOGIES. AS MANY REPUTABLE STUDIES HAVE SHOWN, THE FULL EXTENT OF THIS DEPENDENCE IS NOT KNOWN. I CAN TELL YOU THAT EACH DAY I RECEIVE WORRISOME NEW REPORTS OF TECHNOLOGY-RELATED DEVELOPMENTS OVERSEAS, OR OF U.S. FIRMS WHICH ARE HAVING DIFFICULTIES RETAINING GLOBAL MARKET SHARE.

IT IS ESSENTIAL THAT OUR GOVERNMENT FOSTER THE PROPER ENVIRONMENT AND POLICIES TO ENSURE THAT OUR INDUSTRY REMAINS ON THE TECHNOLOGICAL FOREFRONT AND IS ABLE TO EXPLOIT EMERGING TECHNOLOGIES IN BOTH THE COMMERCIAL AND DEFENSE ARENAS. IT IS NOT ENOUGH THAT U.S. INDUSTRY DEVELOPS NEW TECHNOLOGIES -- IT MUST TURN THOSE TECHNOLOGICAL FEATS INTO COMMERCIAL SUCCESSES.

IT HAS BEEN AND REMAINS A KEY POLICY OF THE UNITED STATES TO MAINTAIN A VIABLE DEFENSE INDUSTRIAL BASE. AS STATED IN THE ADMINISTRATION'S PROPOSED DEFENSE PRODUCTION ACT BILL, IT IS THE RESPONSIBILITY OF THE GOVERNMENT TO:

> "ASSESS THE CAPABILITY OF THE DEFENSE INDUSTRIAL BASE TO SATISFY PEACETIME, SURGE, AND MOBILIZATION REQUIREMENTS AND TO TAKE NECESSARY ACTIONS TO ENSURE THAT ADEQUATE DOMESTIC PRODUCTION CAPACITY EXISTS TO SATISFY THESE REQUIREMENTS."

THE DEFENSE PRODUCTION ACT HAS BEEN A CORNERSTONE OF OUR NATIONAL SECURITY INDUSTRIAL BASE AND MOBILIZATION PLANNING FOR NEARLY FORTY YEARS. IT IS THE PRIMARY MECHANISM USED TO IMPLEMENT ACTIONS TO MITIGATE PEACETIME DEFENSE PRODUCTION PROBLEMS AND PRESERVE TECHNOLOGICALLY-CRITICAL DEFENSE MANUFACTURING CAPABILITIES.

THERE ARE NUMEROUS EXAMPLES OF THE DPA'S UTILITY AND

EFFECTIVENESS. THE COMMERCE DEPARTMENT RECENTLY USED ITS TITLE I DEFENSE PRIORITIES AND ALLOCATIONS AUTHORITIES TO DIRECT THE PRODUCTION OF AMMONIUM PERCHLORATE (A PRIMARY COMPONENT OF SOLID ROCKET FUEL) TO MEET CRITICAL DEFENSE AND COMMERCIAL SPACE REQUIREMENTS.

THIS ACTION WAS NECESSARY AFTER THE EXPLOSION IN 1988 OF AN AMMONIUM PERCHLORATE PLANT IN NEVADA, WHICH RESULTED IN EXTREME SUPPLY SHORTAGES AND ONLY ONE REMAINING DOMESTIC PRODUCER. THE DPA'S PRIORITIES AND ALLOCATIONS AUTHORITY WAS ALSO USED TO EXPEDITE CONSTRUCTION OF A NEW AMMONIUM PERCHLORATE FACILITY. THIS NEW FACILITY BECAME FULLY OPERATIONAL IN LATE 1989.

TITLE III AUTHORITY FOR LOANS, LOAN GUARANTEES, AND PURCHASE COMMITMENTS FOR MATERIALS HAS BEEN USED DURING THE PAST SEVERAL YEARS TO DEVELOP AND ENSURE DOMESTIC SUPPLIES OF CRITICAL ITEMS SUCH AS POLYSILICON FOR MICROCIRCUITS, TRAVELLING WAVE TUBES, AND PITCHED BASE CARBON AND HIGH PURITY QUARTZ FOR COMPOSITE MATERIALS -- ALL ESSENTIAL IN THE PRODUCTION OF SOPHISTICATED WEAPONS SYSTEMS.

THE DPA ALSO PROVIDES THE AUTHORITY FOR DATA COLLECTION FROM INDUSTRY USED TO ASSESS THE PRODUCTION CAPABILITIES AND CONSTRAINTS OF KEY DEFENSE INDUSTRIES. THE DEPARTMENT OF COMMERCE IS CURRENTLY WORKING ON SEVERAL ANALYSES: A JOINT EFFORT WITH THE NAVY TO IDENTIFY FOREIGN DEPENDENCIES DOWN TO THE

SUB-TIER LEVELS IN THREE CRITICAL NAVY SYSTEMS, AND AN ASSESSMENT OF THE PRODUCTION CAPABILITIES OF THE DEFENSE-RELATED GEAR INDUSTRY IN A COMBINED EFFORT WITH THE INTERNATIONAL TRADE COMMISSION AND THE NAVY. WE ARE ALSO UNDERTAKING NATIONAL SECURITY ASSESSMENTS OF THE SEMICONDUCTOR MANUFACTURING EQUIPMENT AND ROBOTICS INDUSTRIES.

A JOINT COMMERCE AND DEFENSE STUDY OF THE PRECISION OPTICS INDUSTRY HIGHLIGHTED THE SERIOUS DETERIORATION OF THIS CRITICAL DEFENSE INDUSTRY. PARTIALLY AS A RESULT OF THIS STUDY, GOVERNMENT, ACADEME, AND INDUSTRY ARE SUPPORTING THE ESTABLISHMENT OF A CENTER FOR OPTICS MANUFACTURING IN ROCHESTER, NEW YORK, DESIGNED TO INCREASE THE COMPETITIVENESS AND PRODUCTIVITY OF THIS DEFENSE-CRITICAL INDUSTRY.

UNDER THE PROVISIONS OF TITLE VII OF THE DPA, KNOWN AS THE EXON-FLORIO PROVISION, THE PRESIDENT IS AUTHORIZED TO TAKE ACTION TO PROHIBIT OR SUSPEND A FOREIGN MERGER, ACQUISITION, OR TAKEOVER THAT MIGHT THREATEN TO IMPAIR THE NATIONAL SECURITY. THE DEPARTMENT OF COMMERCE PARTICIPATES IN THE INTERAGENCY COMMITTEE ON FOREIGN INVESTMENT IN THE UNITED STATES (CFIUS), WHICH REVIEWS RELEVANT TRANSACTIONS UNDER THE LAW AND MAKES REPORTS AND RECOMMENDATIONS TO THE PRESIDENT.

SINCE THE ENACTMENT OF EXON-FLORIO, THE CFIUS HAS REVIEWED OVER 200 PROPOSED ACQUISITIONS, AND HAS UNDERTAKEN AN IN-DEPTH

ANALYSIS OF SIX CASES WHICH INVOLVED PARTICULARLY SIGNIFICANT SECTORS OF THE DEFENSE BASE.

UNDER SECTION 309 OF THE DEFENSE PRODUCTION ACT, THE DEPARTMENT IS AN ACTIVE PARTICIPANT IN THE INTERAGENCY GROUP TASKED WITH ANALYZING AND REPORTING ANNUALLY ON THE IMPACT OF OFFSETS IN DEFENSE TRADE ON THE UNITED STATES. COMMERCE HAS PREPARED THAT PORTION OF THE REPORT ANALYZING THE IMPACT OF THESE COMPENSATION PRACTICES ON U.S. INDUSTRIAL COMPETITIVENESS.

IT IS CLEAR FROM JUST THESE FEW EXAMPLES THAT THE AUTHORITIES PROVIDED BY THE DPA ARE A CRITICAL TOOL IN ENSURING THE LONG-TERM VIABILITY OF OUR DEFENSE INDUSTRIAL BASE, AND HENCE OUR NATIONAL SECURITY.

ALTHOUGH THESE PROGRAMS CONTINUE TO BE IMPORTANT ASPECTS OF OUR INDUSTRIAL BASE PLANNING, THE ISSUES OF A VIABLE DEFENSE INDUSTRIAL BASE ARE MUCH BROADER. THE DPA WAS DEVELOPED IN A TIME WHEN THE U.S. WAS THE UNRIVALLED ECONOMIC AND TECHNOLOGICAL LEADER. EVEN THEN, A DPA WAS NECESSARY. IN TODAY'S GLOBAL ENVIRONMENT, IT IS EVEN MORE IMPORTANT.

THERE IS GROWING RECOGNITION BY LEADERS IN INDUSTRY, GOVERNMENT, LABOR, AND ACADEME THAT THIS NATION FACES VERY SEVERE TECHNOLOGY COMPETITIVENESS CHALLENGES THAT HAVE STRONG IMPLICATIONS FOR OUR FUTURE ECONOMIC AND MILITARY SECURITY.

DURING THE PAST SEVERAL DECADES, MANY AMERICAN COMPANIES BECAME MULTI-NATIONAL, WITH MAJOR OPERATIONS IN OTHER COUNTRIES. THEIR INTERESTS AND ALLEGIANCES, HOWEVER, REMAINED AMERICAN. MORE RECENTLY, WE HAVE SEEN THE EMERGENCE OF TRULY INTERNATIONAL COMPANIES, WITH INTERNATIONAL INTERESTS TAKING TOP PRIORITY. THE CONSEQUENCES OF THESE COMPANIES' DECISIONS ABOUT PLANT LOCATION, HIRING, R&D INVESTMENTS, AND THE LIKE ON U.S. CITIZENS AND ON OUR INDUSTRIAL BASE UNDERSTANDABLY SEEM OF SECONDARY IMPORTANCE TO THEM.

MARKETS THEMSELVES NOW ARE GLOBAL TO A DEGREE ONLY IMAGINED A DECADE AGO. TO BE SUCCESSFUL, COMPANIES MUST DEVELOP AND OFFER PRODUCTS SALEABLE IN THE INTERNATIONAL MARKETPLACE. THE COMPETITION IS GLOBAL, TOO, OF COURSE. THIS IS AFFECTING MORE THAN JUST THE LARGE COMPANIES IN AMERICA. EVEN SMALL U.S. FIRMS THAT COULD RELY ON THEIR POSITION AS SECURE SUPPLIERS TO U.S. MANUFACTURERS ARE BEING THREATENED BY COMPETITION FROM ABROAD. AT THE SAME TIME, THIS INTERNATIONALIZATION PROVIDES SMALLER COMPANIES EVEN LARGER MARKETS IN WHICH THEY CAN COMPETE. IN ACADEME, TOO, THE MOVE TOWARD INTERNATIONALIZATION HAS INCREASED DRAMATICALLY.

THE DRAMATIC GLOBALIZATION OF TECHNOLOGY IS PERHAPS THE SINGLE MOST DOMINANT INDUSTRIAL DEVELOPMENT OVER THE PAST TEN YEARS. IT SETS THE TONE FOR ANY DISCUSSION ABOUT POLICIES REGARDING THE

INDUSTRIAL BASE.

IT IS EASY TO FOCUS ON JAPAN, BUT THE CHALLENGE COMES FROM OTHERS, TOO. THAT INCLUDES SOUTH KOREA AND OTHER PACIFIC RIM NATIONS. THE NEWLY UNIFYING WEST EUROPEANS SHOULD BE THOUGHT OF NOT JUST IN TERMS OF THE SIZE OF THEIR MARKET BUT THE LIKELIHOOD THAT THEY MAY WELL BECOME STRONGER COMPETITORS WITH U.S. FIRMS FOR DOMESTIC AND FOREIGN MARKETS. AND IT WOULD BE SHORTSIGHTED TO IGNORE THE CIVILIAN AND MILITARY TECHNOLOGY POTENTIAL OF THE CHINESE, THE DEMOCRATIZING EAST EUROPEANS, AND THE SOVIETS.

THERE IS MUCH GOOD THAT IS COMING, AND STILL MORE GOOD THAT CAN BE REALIZED, FROM THIS INTERNATIONALIZATION, AND SPECIFICALLY, THE GLOBALIZATION OF MARKETS AND TECHNOLOGIES. THIS TREND ENCOURAGES SHARING THE FINANCIAL BURDEN OF INCREASINGLY SOPHISTICATED AND COSTLY TECHNOLOGIES AND LARGE PROJECTS -- INCLUDING DEFENSE PROJECTS. IT SPURS THE DEVELOPMENT OF NEW EMERGING TECHNOLOGIES AND MARKETS -- WHETHER DEFENSE OR CIVILIAN ORIENTED.

BUT THE GLOBALIZATION OF TECHNOLOGIES ALSO CARRIES MANY RISKS. IN THE MILITARY ARENA, IT MAKES IT MORE DIFFICULT TO CONTROL SENSITIVE TECHNOLOGIES. MOREOVER, IT MAKES US INEXTRICABLY DEPENDENT ON OTHER NATIONS, AND THEY ON US.

BALANCING THE NEED TO COMPETE AND COOPERATE IN AN INCREASINGLY

INTERDEPENDENT WORLD WITH THE REQUIREMENT FOR A TECHNOLOGICALLY STRONG AND SELF-SUFFICIENT DEFENSE INDUSTRIAL BASE IS ONE OF THE GREAT CHALLENGES THAT FACE OUR NATION TODAY.

WE MUST LOOK CLOSELY AT HOW OTHERS ARE REACTING IN THIS NEW ENVIRONMENT. ARE OTHER COUNTRIES SETTING ASIDE THEIR OWN NATIONAL INTERESTS IN THE SPIRIT OF GLOBAL COOPERATION? WITH THE EXCEPTION OF SOME JOINT RESEARCH EFFORTS, MOST PROBABLY THE CORRECT ANSWER IS "NO."

THE SIMULTANEOUS GLOBALIZATION AND NATIONALIZATION OF TECHNOLOGY HAS A DIRECT BEARING ON OUR INDUSTRIAL BASE.

AEROSPACE IS A CRUCIAL EXAMPLE. THIS SECTOR OF U.S. INDUSTRY WHICH OWES MUCH TO DEFENSE INITIATIVES AND SUPPORT IS OUR STRONGEST IN TERMS OF REGISTERING A POSITIVE TRADE BALANCE. U.S. AEROSPACE EXPORTS IN THIS YEAR SHOULD TOP $33 BILLION, WITH AN EXPECTED TRADE SURPLUS OF $20 BILLION.

OUR POSITION AS WORLD LEADER IN AEROSPACE IS STILL INTACT, BUT IT IS BEING CHALLENGED BY EUROPE. WE FACE JAPANESE AND KOREAN INITIATIVES IN DEVELOPING AEROSPACE CAPABILITIES AND COMPETITIVENESS. I FIND IT PARTICULARLY WORRISOME THAT SOME VERY KNOWLEDGEABLE PEOPLE ARE PREDICTING THAT THE JAPANESE WILL BE EXPORTING MILITARY SYSTEMS WITHIN THE NEXT DECADE.

MAKING THIS SECTOR MORE CRITICAL IS THE FACT THAT AT A TIME OF SHRINKING MILITARY MARKETS, AMERICAN DEFENSE AND AEROSPACE FIRMS ARE LINKING UP WITH OVERSEAS COMPETITORS IN A WAY, AND TO A DEGREE, THAT WOULD HAVE BEEN HARD TO CONCEIVE OF JUST FIVE YEARS AGO. MOREOVER, TIGHT DEFENSE BUDGETS AND THE TREND TOWARD INTERNATIONALIZATION UNDERSTANDABLY ENCOURAGE CONGRESS AND DOD TOWARD JOINT R&D PROJECTS WITH OTHER COUNTRIES AS A MATTER OF POLICY. SUCH POLICIES PRESENT BOTH OPPORTUNITIES AND RISKS TO OUR DEFENSE INDUSTRIAL BASE. MUCH DEPENDS UPON OUR MANAGERS' BEING ALERT AND SENSITIVE TO THE NEW DEMANDS PLACED ON THEM AS THE DETAILS OF THESE JOINT VENTURES ARE NEGOTIATED.

IN THE MIDST OF THE WORRISOME REPORTS ABOUT OUR COMPETITIVENESS AND INDUSTRIAL BASE, THERE ARE SOME ENCOURAGING SIGNS. FIRST AND FOREMOST OF THESE IS THE INCREASING ATTENTION THESE ISSUES ARE RECEIVING, AND OUR GROWING UNDERSTANDING OF THE LINKAGE BETWEEN OUR ECONOMIC AND MILITARY SECURITY.

IN A REPORT RELEASED RECENTLY, A DEFENSE SCIENCE BOARD TASK FORCE CONCLUDED THAT "NATIONAL POLICIES FOR DEFENSE INDUSTRIAL COOPERATION CANNOT BE ADDRESSED IN ISOLATION FROM A MUCH BROADER SET OF CONSIDERATIONS INVOLVING ECONOMIC AND POLITICAL ISSUES."

BEYOND THIS GREATER AWARENESS ARE OTHER POSITIVE DEVELOPMENTS. R&D CONSORTIA HAVE BECOME COMMONPLACE --- ABOUT 150 SUCH JOINT OPERATIONS HAVE REGISTERED WITH THE GOVERNMENT --- AND VENTURES

LIKE THE NATIONAL CENTER FOR MANUFACTURING SCIENCES AND SEMATECH ARE BEGINNING TO YIELD DIVIDENDS. NOW WE ARE SERIOUSLY CONSIDERING THE NEXT STEP --- RELAXING ANTITRUST RULES THAT CONSTRAIN JOINT PRODUCTION VENTURES.

FEDERAL TECHNOLOGY TRANSFER LAWS HAVE BEEN CHANGED, AND THE PAYOFFS ARE BEGINNING TO SHOW UP IN INCREASED FEDERAL LAB-INDUSTRY COOPERATIVE AGREEMENTS AND LICENSING ARRANGEMENTS. WE ARE BEGINNING TO CONFRONT OUR EDUCATION AND TRAINING NEEDS, AND WE ARE HOPEFUL THAT THE MOMENTUM GENERATED BY THE PRESIDENT'S EDUCATION SUMMIT LAST FALL AND THE GOVERNORS' MORE RECENT MEETING WILL PROVIDE SOLID GAINS IN OUR SCHOOLS AND WORKPLACES. SOME KEY COMPANIES AND NON-PROFIT GROUPS ARE DEMONSTRATING THE DEPTH OF THEIR CONCERN WITH VERY SUPPORTIVE ACTIONS FOR TRAINING AND EDUCATION VENTURES ACROSS THE COUNTRY.

HAPPILY, WE ARE SEEING EVIDENCE THAT U.S. CORPORATIONS ARE TRULY TAKING QUALITY IMPROVEMENT SERIOUSLY. MORE AND MORE COMPANIES AND DOD, A KEY PURCHASER OF PRODUCTS AND SERVICES IN THIS COUNTRY, ARE RECOGNIZING THE IMPORTANCE OF TOTAL QUALITY MANAGEMENT, AND THEY ARE DOING SOMETHING SIGNIFICANT ABOUT IT.

WE STILL HAVE A LONG WAY TO GO TO REINFORCE OUR INDUSTRIAL BASE IN WAYS THAT WILL IMPROVE OUR ECONOMIC AND MILITARY SECURITY. WE MUST ASSURE THAT GLOBAL COMPETITIVENESS, INCLUDING WORLD-CLASS MANUFACTURING AND TECHNOLOGICAL INNOVATION, IS A TOP PRIORITY

OBJECTIVE FOR U.S. INDUSTRY.

WE MUST DO A FAR BETTER JOB AT EDUCATING AND MOTIVATING OUR EMPLOYEES, INCLUDING OUR MANAGERS. THIS INCLUDES GETTING MORE OF OUR BRIGHTEST-AND-BEST COLLEGE STUDENTS TO PURSUE STUDIES IN MANUFACTURING TECHNOLOGY ON CAMPUS, AND THEN TO PURSUE CAREERS IN THIS FIELD.

EVEN THOUGH IT IS VITAL THAT WE CONDUCT VIGOROUS R&D EFFORTS, WE MUST RECOGNIZE MORE CLEARLY THAT THE WAYS IN WHICH WE USED THE RESULTS OF THIS WORK AND HOW WE MANAGE OUR TECHNOLOGY ARE CRITICAL. SO WE MUST APPLY ADVANCED TECHNOLOGIES, SUCH AS COMPUTER INTEGRATED MANUFACTURING, MORE EFFECTIVELY. WE MUST ASSURE THAT THE LARGE INVESTMENTS WE MAKE IN MILITARY R&D AND PROCUREMENT ARE ALSO UTILIZED BY OUR COMMERCIAL SECTOR TO THE MAXIMUM EXTENT PRACTICAL -- AND THAT OUR COMMERCIAL EFFORTS ARE TAKEN ADVANTAGE OF BY OUR DEFENSE COMMUNITY.

INDUSTRY MUST GET ACCESS TO LOWER-COST AND PATIENT SOURCES OF CAPITAL WHILE AGGRESSIVELY JUSTIFYING NEW INVESTMENTS. WE CAN DO THIS, IN PART, BY BETTER ANTICIPATING THE RESULTING BENEFITS, SUCH AS IMPROVED QUALITY, REDUCED INVENTORY, AND RAPID COMMERCIALIZATION.

AND, GETTING BACK TO QUALITY: WE MUST SUSTAIN QUALITY AND PRODUCTIVITY IMPROVEMENT AS A TOP PRIORITY OBJECTIVE. QUALITY

IMPROVEMENT PROPERLY DEFINED AND EFFECTIVELY IMPLEMENTED IN A TOTAL QUALITY MANAGEMENT APPROACH IS ONE OF THE MOST SIGNIFICANT SECRETS TO THE FUTURE SUCCESS OF OUR INDUSTRIAL BASE.
INDUSTRY MUST SET THE TONE AND TAKE THE LEAD IN THESE VITALLY NEEDED STEPS.

GOVERNMENT HAS A ROLE TO PLAY IN REDUCING BARRIERS THAT BLOCK U.S. COMPANIES' PATHS TO GLOBAL TECHNOLOGY COMPETITIVENESS, INCLUDING DISINCENTIVES TO THE AVAILABILITY OF LOW-COST, PATIENT CAPITAL, RESTRICTIVE GOVERNMENT PROCUREMENT RULES AND OTHER REGULATIONS, AND INADEQUATE COORDINATION OF GOVERNMENT R&D PROGRAMS AND POLICIES.

GOVERNMENT ALSO HAS A RESPONSIBILITY TO ENSURE THAT THE TECHNOLOGICAL INFRASTRUCTURE NEEDED TO SUPPORT INDUSTRY'S EFFORTS IS FIRMLY IN PLACE. THIS INCLUDES R&D SUPPORT FOR PRE-COMPETITIVE BASIC RESEARCH AND TECHNOLOGY OF BROAD RELEVANCE TO U.S. INDUSTRY. THIS INCLUDES DUAL USE TECHNOLOGIES, TO THE EXTENT POSSIBLE WITHIN THE CURRENT BUDGET CONSTRAINTS. IT ALSO INCLUDES SUPPORT FOR SCIENCE AND ENGINEERING FACILITIES AND EDUCATION, AND FOR VARIOUS TECHNOLOGY INFORMATION-CLEARINGHOUSE PROGRAMS.

MY BASIC MESSAGE IS SIMPLE: OUR NATIONAL SECURITY IS FOUNDED ON THE STRENGTH OF OUR INDUSTRIAL AND TECHNOLOGY BASE. WE AS A NATION MUST TAKE EFFECTIVE ACTION TO ENSURE THAT OUR DEFENSE

INDUSTRIAL BASE REMAINS INTERNATIONALLY COMPETITIVE, AND THAT WE PRODUCTIVELY EXPLOIT THE BENEFITS OF TECHNOLOGY GLOBALIZATION.

FINALLY, MR. CHAIRMAN, YOUR LETTER OF INVITATION ASKED THAT I RESPOND TO FOUR SPECIFIC QUESTIONS FROM THE COMMITTEE. MY ANSWERS ARE ATTACHED AS AN APPENDIX TO THIS STATEMENT.

THANK YOU. I WOULD BE PLEASED TO ANSWER ANY QUESTIONS THE COMMITTEE MAY HAVE.

Answers to Committee Questions

Question 1.

Do you believe that current systems for gathering and assessing data on the extent of foreign dependencies among prime contractors and subcontractors of defense materials are adequate? What changes in our current assessment policies and practices would you recommend, if any?

As numerous studies of the defense industrial base by Government and non-Government organizations have concluded, we currently do not have any means for really assessing the extent of foreign dependencies on a broad scale. Our knowledge of foreign dependencies is extrapolated from "perceived" or anecdotal information. The GAO investigated this issue late last year, and reached the same conclusions.

The Department of Commerce is currently addressing the issue of foreign dependency through a micro-level study of three critical Navy systems -- the Verdin Communications System, the Harm missile, and the Mark 48 torpedo We are working with the Navy to identify all sources of components for these systems, from major subsystems down to raw materials We are doing this through a multi-phase survey process, starting with the prime contractors and proceeding down the supplier chain. We are currently down to the third tier subcontractor level -- 4,000 subcontractors for the three systems.

Question 2.

Do you have concerns that foreign companies might become the sole source of certain equipment or technologies vital to our national security?

Yes. I think that anyone who has experience or responsibilities for defense industrial base issues would share this concern. We currently know very little about the extent of our dependence on foreign suppliers, which makes it difficult to resolve this complex issue. We all have heard of instances in which the Department of Defense already relies heavily on foreign sources for components and systems. I understand that DARPA is completing a comprehensive assessment of our situation. In today's global economy, we are inextricably dependent on other nations, and they on us.

I believe that the most effective way to address the problem of foreign dependency is to ensure that U.S. industries, especially those critical to our defense, remain internationally competitive and at the forefront of technological innovation. We in Government must take appropriate action to foster the correct environment in which our industries can prosper.

Question 3.

Do you believe the Federal Government should make greater efforts to foster the development of domestic based defense related technologies either directly through funding programs, or indirectly through encouraging joint industry cooperation or compulsory licensing of foreign technology?

It is clear to me that Government should continue to support domestic-based defense technologies within budget limitations. In doing so the Government should seek to leverage its investment wherever possible with private sector dollars This strategy should also help to speed the transfer of resulting defense-related technology into commercial applications.

The Government should focus on eliminating unnecessary barriers to cooperation among domestic firms, not only in R&D but also in engineering and manufacturing, including broad-based, vertically integrated consortia that have the resources and vision to provide for both national defense needs and civilian competitiveness needs.

The issue of compulsory licensing has a number of facets. The United States has traditionally objected to any "compulsory licensing" of intellectual property rights except in very limited circumstances, such as the existence of a national emergency, or to meet certain governmental needs. In a recent telecommunications negotiation, we succeeded in gaining agreement on a complete prohibition on the use by that foreign country of offsets, including compulsory licensing If we impose legal requirements that force other nations to license technology to us, we encourage them to do likewise. This is contrary to our current trade position.

That can have some serious consequences. Developing nations, for example, will often impose requirements obligating owners of intellectual property to agree to license their property in a specified manner as a condition of receiving a patent, a copyright, etc. We oppose such requirements wherever we find them as undermining the incentives to create and bring new creations to the marketplace that intellectual property systems were intended to create.

Question 4.

Do you believe that current mechanisms to facilitate the transfer of high technology defense research into benefitting civilian related technologies are adequate? What policy changes, if any, would you recommend?

Current mechanisms may be adequate as a whole, but I would note that what is really needed is a new attitude that encourages the fullest cooperation between the federal and private sectors and sensitivity to the fact that actions taken for defense needs can have substantial commercial ramifications.

The basic mechanism for commercializing federal research - defense or otherwise - is described in the Federal Technology Transfer Act of 1986 (FTTA) and the National Competitive Technology Transfer Act of 1989. As Secretary Mosbacher's report to Congress last year indicated, the FTTA appears to be sound, considering both its newness and the fact that it represents a new federal approach to cooperation with the private sector. I don t believe we have a real basis for creating any special procedures or policies for defense research apart from the procedures applicable for encouraging the commercialization of health, environmental, agricultural, or any other specialized area of federal research However, if agencies can demonstrate that they have special needs, we would certainly keep an open mind.

We agree that there are some policies and procedures that may need to be changed, or at least examined, to improve every agency s technology transfer efforts, not just that of DoD. At least three major issues present themselves.

First, copyright law prevents federal employees from enjoying copyright protection for works produced in the course of their official duties. As such agencies are impeded in their efforts to commercialize the software they produce.

Second, all agencies have to take a long and hard look at their conflict of interest regulations This is becoming an issue of increasing concern. To the extent that the rules are too restrictive, the incentives for federal scientists and engineers to interact with the private sector may be severely reduced, thus undercutting a principle objective of the Federal Technology Transfer Act.

Third, all agencies need to examine their procedures to ensure that they have gotten the word to their individual laboratories that they are serious about technology transfer - i.e., that it is a de facto as well as a de jure mission and that their efforts will be factored into evaluations and appraisals. We are particularly pleased that, as a result of new legislation, the Department of Energy is starting to apply Federal Technology Transfer Act procedures to its contractor-operated national laboratories. The Department of Commerce is working closely with them on this initiative.

Senator **Dixon**. Thank you, Mr. Murrin. I am absolutely confident you can handle the very difficult questions that this Senate panel would throw at you, but we appreciate very much your contribution this morning.

I would like the record to show that the distinguished senior Senator from South Dakota was here, Senator Pressler. He had to attend another committee meeting and does not have a statement for the record in this hearing.

Senator **Dixon**. I'm pleased to have my good friend and neighbor, the distinguished Sonator from Missouri, Senator Bond, here, and I wonder if he has any statement he would care to make before we start the questioning.

Senator **Bond**. Thank you, Mr. Chairman.

I appreciate the opportunity, but I will inject my biases into the questions that we ask the witnesses and I look forward to that opportunity.

Senator **Dixon**. Well, I thank you very much.

If I could just make this observation in connection with your testimony, Mr. Murrin, which I thought was very good—and this has nothing to do with the questions I will shortly ask, some of which will be questions from the chairman, Senator Riegle, and to some extent this doesn't even relate to this particular legislation, although it does in a kind of an abstract way.

It occurred to me as I heard your testimony where you were quoting from the book about the Pacific Rim and suggesting in there about the Japanese indicating that they are going to make substantial investments and become major players in aerospace and defense technology. I remember last year's FS-X fight. Everybody has their own opinion about that, but it was a long and pretty extensive and rugged encounter here in the Congress, in which I was the lead on the Senate side and ultimately handled the obligations in trying to override the President's veto in which we fell one vote short.

But it occurred to me that those things are real out there and I wonder sometimes whether we have an overall policy. You talked a bit about the Soviets, which concerns me. Believe it or not, last year I went to a convention in Chicago at McCormack Place and Jim Mack is the man who took me around there, as I recall. Many here know him. I went into a display and there was—all I remember—I don't remember what kind of machine it was, Mr. Murrin, but it was a great big machine tool type of thing, orange in color, huge, maybe the size of this part of the room, and the thing that amazed me was that the East Germans—they were the ones that did this—could sell it here and we couldn't sell the same thing in the world at large under our existing policies under the Export Administration Act.

I see my colleague and friend, the distinguished senior Senator from Pennsylvania, who's known to be pretty much of a leader and expert in this field.

Those are the kinds of things that continue to trouble some of us. Or as we are presently involved in this Clean Air Act, which I think everybody understands is quite important and it's taken a long, long time. It just so happens that the two Senators who are here with me have been very much involved, even more so than this Senator, in the acid rain questions and other things.

But the Senator from Washington State, Senator Gorton, and I will be lead on an amendment to try to do something to try to keep a level playing field in respect to those countries that are not going to have these very strict environmental standards and they're going to again bring their products in here competing with us in an advantageous way. Those things bother me.

I sit in this committee room where the futures industry is under attack in a variety of ways to be subjected to new strict Federal standards that will put that industry at a disadvantage in Tokyo and London. I just see all of this unfolding in a lot of different ways. Some of these aren't related at all, Mr. Murrin, to one another, but when you see that broad picture out there, you begin to wonder whether any other country does this to itself as readily as we do. I could go across the whole stage and in every item of a major kind that you look at we see this happening in a way that I really do truly believe is disadvantageous to our competitive position in that international market you referenced in your remarks.

I just wanted to get that off my chest because it bothers me a lot. It bothers me a lot as an American to see that occur.

Senator Riegle has asked me—and I'm delighted to do it—he is obligated to be in the Finance Committee this morning. He's a very hard-working chairman and on this occasion must be elsewhere.

Mr. Murrin, as Deputy Secretary of Commerce, you served as a member of the National Advisory Committee on Semiconductors which submitted the report entitled, "A Strategic Industry At Risk," to President Bush last November. That report noted the importance of our semiconductor industry to the nation's welfare and stated:

> Unless the U.S. industry and government take coordinated, concerted and timely action, there will be a long-term deterioration of our industrial strength and military security and an erosion of our economic wealth.

Do you know whether President Bush and some of his key economic advisers, such as Mr. Darman, Mr. Boskin and Mr. Porter, have focused on that report at all and do you think its recommendations to build a joint government-industry working relationship to resurrect our semiconductor industry would constitute "picking winners and losers?"

That's several questions.

Mr. MURRIN. Well, thank you, Mr. Chairman.

I feel fortunately, frankly, as I referenced briefly in my oral statement, that we have the benefit in replying to Senator Riegle's very thoughtful question to reference comments made just yesterday by the President to the American Electronics Association. That association, we know is vitally involved in the semiconductor industry. If I may just quote briefly from a few comments the President made, I think you will find this responsive.

> For almost 50 years now, your industries have been at the center of a remarkable revolution in the way work is done, the way ideas are managed, even the way time and the vast reaches of space are understood. We intend to work with you closely, constantly, and consistently to see that American electronics and technologies regain and retain a preeminent position in world markets. We are committed to a comprehensive program for both immediate and long-term competitive strategies for

> the future. While we are only at the start of a process that shows great promise, today I want to outline briefly what we are already doing.
>
> Our first priority is to encourage productivity gains, savings, and long-term investment in high tech industries, while lowering the cost of capital. We believe that one of the most crucial Federal priorities is to encourage planning for the long term because for too long, where investment is concerned, the Federal Government has been more of a hindrance than a help.

Let me skip if I may to a few other particularly relevant paragraphs.

In referencing the overall 1991 budget the President states:

> Our budget also devotes unprecedented resources to space, education, the fight against drugs, environmental initiatives, and other crucial investments in America's future. Such investments over the years have ensured that this country has retained its leadership in terms of the basic research and fundamental discoveries underlying your industry.

That's electronics.

> This administration is also committed to working with you in the critical precompetitive development stage where the basic discoveries are converted into generic technologies that support both our economic competitiveness and our national security. Here again we can help to level the international playing field on which you compete.

If I may, I'll just read quickly a few other short statements, again verbatim from the President's talk yesterday.

> To provide a further competitive edge for American firms, we will support legislation to reduce the antitrust uncertainty that may discourage joint production ventures. Under such a proposal, the courts would weigh on a case-by-case basis, the competitive benefits as well as costs of joint production ventures. In addition, joint production ventures announced by the Government would be liable only for actual damages in private antitrust suits. Such an initiative would build on the competitive strength of American business by allowing firms to pool their skills, build new production facilities, and share investment risks.
>
> One risk you all face, of course, at an intolerable level, is product liability. And the Council on Competitiveness, ably chaired by Vice President Quayle, has already begun a concentrated effort to significantly reform our cumbersome and expensive product liability system. It's about time we made ourselves more competitive by getting rid of the lawsuits and claims that are frivolous and patently unfair.
>
> Today, I am going to give the Competitiveness Council another challenge, to find ways that American industry can better translate new ideas and technologies into marketable products. So many of the world's most advanced technologies, from robotics to the VCR, were first developed here; yet, so many of those concepts were ultimately brought to the marketplace by our competitors. We can do better and we will do better.

I hope, Mr. Chairman, you find these comments of the President very relevant to the Senator's questions regarding semiconductors and electronics and they are statements that I personally and we at Commerce are greatly heartened by, and I hope you feel similarly.

Senator DIXON. Following up on that, Mr. Murrin, I note that you are an executive director of the National Advisory Committee on Semiconductors. You are listed as a National Advisory Committee Executive Director. Their pamphlet says:

> Accordingly, we recommend that the following inseparable actions be implemented as a unit: resurrect the U.S. consumer electronics industry infrastructure by creating a multibillion dollar pool of low-cost, very patient capital.

Then they go on to say that that funding should be a multihundred million dollar equity investment from industry sources, private institutional investors, and State and local governments, accompanied by pledges of support by State and local governments.

I ask you whether you believe that's an appropriate way to address the problem.

Mr. **Murrin**. If I might, sir, in responding, let me give you a very brief preamble.

As you obviously know, the group charged by the Congress to make this study comprised key people in industry and also a few of us from government and we were faced, as such a group typically is in developing its recommendations and its initial report, to try to come to consensus and to try to make recommendations that could be supported generally.

The recommendations that emerged, principally number three, and the first relates to reestablishing a fully competitive and supportive business environment, particularly enabling the semiconductor industry to operate on equal footing with its major international competitors, and cites five specific suggestions relating to capital formation, the education system, reforming trade law, protecting intellectual property, and improving the antitrust climate.

My impressions here, sir, are that in both parties in the Congress and in the administration there is essentially agreement that these are appropriate initiatives and in various forms they are proceeding.

Senator **Dixon**. Well, if I could interrupt at that point in time because, Mr. Murrin, I am asking questions for the chairman and my time has expired. I don't want to impose on my colleagues. I want to go to them.

But the last question of Senator Riegle, our distinguished chairman, is, on page 8 of your testimony you refer to new challenges to our aerospace industry and state that you find it particularly worrisome that some very knowledgeable people are predicting that the Japanese will be exploiting military systems within the next decade. Of course you spent some time on that in your testimony.

Why do you find that worrisome and are any policies being followed by our government in the aerospace industry helping Japan to achieve that objective in your view?

Mr. **Murrin**. Well, I think any prospect of another country, other than the United States, becoming preeminent in either the aerospace field, commercially or militarily, or the electronics field, is a very worrisome possibility. As I mentioned earlier, that prospect indeed did emerge from the study of the Department Science Board on "Pac. Rim 2000". I was privileged to participate in that and I shared in that judgment and I do endorse that that is a prospective development, if we don't act prudently.

I think that report and others like it—and indeed the work of your distinguished committee—is increasing the thoughtful attention being given to these very important and very challenging issues. I think we are moving these matters much higher up on our priority listing and I am becoming increasingly encouraged that we are beginning to do the things that we ought to appropriately do, especially to act in our own self-interest.

In regard to helping others, as you well know, we have the fundamental dilemma of, on the one hand, sharing know-how and various resources with our friendly allies around the world, and our collective military and security self-interest with the prospect that if we don't do that prudently we may, unwittingly or otherwise, assist them in advancing their industrial and commercial capabilities which might and probably would ultimately be to our disadvantage.

As I say, I think very thoughtful people here in the Congress and in the administration are addressing these issues more carefully and I am guardedly optimistic that this is going to work out okay.

Senator DIXON. Well, I thank you, Mr. Murrin.

Under the early bird rule and with the indulgence of my friend from Pennsylvania, I will recognize the distinguished Senator from Missouri, Senator Bond.

Senator BOND. Thank you very much, Mr. Chairman.

Obviously, there are many things on the table for us to consider. I thought I would begin—the question that occurred to me as I reviewed a story that appeared in the February 5 issue of Business Week, talking about the future of Silicon Valley.

Apparently, some of the smaller competitors in that particular field are very much concerned about the threat to them of removing antitrust prohibitions against consortia and among the things that were said, it becomes a lot less painful for a group of companies to band together and go after the startups.

These smaller companies are raising some real concerns about what is likely to happen to the domestic competitors if large competitors go into consortia.

To what extent do you feel that's a problem and what would be your response to those who raise that concern?

Mr. MURRIN. Well, Senator, I think that is a problem viewed from the vantage point of those small entrepreneurial, usually high-risk enterprises. I see, however, no basic reason why we can't proceed in a way that allows them, if they would like to participate in various consortia, and work out our plans and programs such that they benefit rather than are hurt.

We have the fundamental dilemma that we in the United States are particularly advantaged by such very creative and high-risk-taking, usually small organizations, but we haven't yet completely figured out how to aid them fully effectively in growing and in exploiting their outstanding know-how.

As I say, I think that can be worked out and I don't see any fundamental conflict between allowing a production consortia or indeed consortia to be organized and flourish, and the particular and sometimes peculiar interests of smaller versus larger companies.

Senator BOND. So you're saying that if you permit consortia maybe these little companies can just form their own consortia, but even if they don't want to, they could still be under the gun from the larger companies that get together and pile on the innovative, small competitor. You don't think that's a problem?

Mr. MURRIN. I think it's a problem, but I think it's a problem we can handle.

Senator BOND. How?

Mr. MURRIN. Senior executives of several of the large electronics and semiconductor companies have volunteered on several occasions to me that they are very sensitive to the concerns and needs of the companies you're referring to and they are very anxious to work out arrangements that would allow them, for example, to participate in some of the same consortia that they might participate in.

So I think the option of smaller companies joining among themselves, smaller companies joining with larger companies, or a variety of other combinations remains to be worked out. I'm just opining that the benefits that will almost certainly flow from refining our antitrust regulations so we can have manufacturing-type consortia, those benefits are so attractive that we ought to commit our considerable resources to figuring out how in the process to protect and indeed enhance the self-interest of those smaller, very valuable organizations you were referring to. I think that can be done.

Senator BOND. Well, I hope that you're right. I get the same sense of warm feeling that the residents of the chicken coop may feel knowing that the foxes are getting together with only their best interest at heart.

But moving on to another piece of matters before us, is it the position of the administration that the Exon-Florio legislation, as it is currently written, provides sufficient protection against foreign ownership of U.S. businesses impairing our national security? Would you care to comment on that and the proposed changes?

Mr. MURRIN. Well, at Commerce, as you probably know, sir, we are one of, I think, eight agencies involved in the Exon-Florio process. The total number of cases that has come to that group's attention now numbers more than 200. A few of these cases have been reviewed in great detail with the extended 45-day period, and in each of those cases it was determined that the national security interests were not put at jeopardy sufficiently to block the prospective acquisition by foreign firms.

I think the challenge we have in this regard, frankly, is to more clearly associate the national security interests as defined by Exon-Florio with the aggregate industrial base concerns we have and overall our economic security. That gets to be, as you know, a very difficult task.

We also have the practical reality that, given our current financial situation, we need to attract large sums of financial investment to indeed provide the mechanism for research and development, new plant and equipment and jobs and taxes, and that of course, in turn, gets back to the question of our deficit and capital gains and savings and those myriad of matters that you're expert about.

I think, viewed as a particular procedure, Exon-Florio is working adequately in the sense that the process does work effectively. The group cooperates together. It does analyze and indeed, on occasion, agonize over the significance of these determinations. If one steps back, however, and asks what is the aggregate effect over time of all of this, I think there are some serious hurdles that we still have to get over and issues to resolve.

Senator BOND. I might ask finally your assessment—we have heard much concern over the shrinking size and alarming stories about the threat of competition to our defense industrial base.

Do you believe there's a crisis? Do you feel the solutions proposed in S. 1379 are the answer?

Mr. MURRIN. Well, I'm not sure how one would prudently characterize our situation. Indeed, it's a very serious challenge and merits, as indeed this distinguished committee is addressing, careful consideration.

Many of the aspects of the legislation I think are laudable. Indeed, the Defense Production Act has contributed significantly to our country's interest for several decades and in the written testimony we have entered for the record with your approval we cite some significant happenings of that type.

We do endorse, for example, increasing the loan guarantee thresholds from $25 to $50 million. We are very impressed, for example, with the imaginative proposals regarding the stockpile revolving fund. Here I'm told there are some important accounting aspects that are being reviewed carefully and which we hear about.

In regard to other areas like offsets and antitrust, perhaps you've helped to stimulate in a very positive way very promising activities by the administration and others. In the offset area, as you may know, the administration is developing a policy on this important matter and I think you will be pleased as it emerges as to its nature.

In regard to some of the antitrust provisions, I think you know, as I mentioned a few moments ago, that is a matter getting active and positive treatment by the administration, and particularly the Commerce Department and Justice Department have joined very effectively and actively in this regard.

So in general, we applaud the essence of what has been done and is proposed. We endorse strongly certain aspects of it. And as I expect you would anticipate, we have some differing views on certain other aspects.

Senator BOND. Thank you, Mr. Chairman.

Senator DIXON. Thank you, Senator.

I am pleased to recognize the distinguished senator from Pennsylvania, who frankly I think has been one of the outstanding leaders in the U.S. Senate in my time here on these issues, export policy things, and I have valued his point of view and learned from it over the years and I am delighted to recognize Senator Heinz.

Senator HEINZ. Mr. Chairman, if you care to continue in that same vein, I will yield the rest of my time to you. [Laughter.]

Thank you very much, Mr. Chairman. Tom, welcome to the committee.

I think that everybody knows that Tom Murrin is a man I know well. I was pleased to testify at his confirmation hearing. That didn't hold him back unduly. Of course, he is from Pittsburgh and has a very distinguished career in business. He knows wherefor he speaks, which is kind of nice because we don't often get people here who have been in the real world for very long, or at least certainly as long as Tom has with such an outstanding record.

Tom, let me ask you a philosophical question. We are very proud of the free enterprise system in this country. Its roots go way back. Under our free enterprise system, it's our belief that government should stay out.

Now that's not the way it is. The way it is in this country is that government gets in. We've got a bill on the floor called the Clean Air Act. At last check, the administration thought it was okay because it was only going to increase the cost on business to the tune of $20 billion a year come the year 2005. That was the moderate approach. The immoderate approach apparently was S. 1630 and that was going to be $40 billion a year by the year 2005. Which is my way of saying that if you're real lucky in this country, what the free enterprise system means is that government isn't neutral; it's just not on your back too heavy. That's the free enterprise system the American way.

Indeed, if you look at some of the plans for the second great society lurking in the Human Resources Committee, let me tell you, the Clean Air Act looks cheap compared to some of the other things that have been cooked up by people who don't want to increase taxes but feel there's a lot of stuff that needs to be done. So that's the American way.

Now overseas, it strikes me things are a little different. We have competitors who are capitalistic, who compete among themselves, who are market-driven, but are very strongly government supported.

My question is, how can our free enterprise system, as it is today—and even if the Government got off everybody's back—succeed against economies that are capitalist and market-driven but where the Government is in their playing a very active supportive role and, most importantly, doesn't care who knows it, is proud of it? How do we succeed?

Is there any possible way we can succeed? Yes or no? No filibuster is needed.

Mr. MURRIN. Senator, I was hoping you would ask a true or false question. Yes or no is pretty close to that, I guess.

Senator HEINZ. I'll rephrase it so you can do it, true or false?

Mr. MURRIN. Well, as you know better than I, sir, and I have been privileged to discuss these key matters with you personally one-on-one as well as in distinguished settings like this is—the reality, like it or not—and I think we ought to like it—is, if we look at our own history, we see that indeed our government has played a very, very significant role in these crucial regards.

On the positive side, we still today cite—and I think happily so—the role of government in helping to develop the extraordinary capabilities our Nation enjoys in the agricultural field, also in aerospace. Indeed, in space. And one area that is somewhat contentious but significant nevertheless, nuclear.

Senator HEINZ. What you're citing are the two or three areas where government has been very active, very supportive.

Senator DIXON. And it's worked.

Senator HEINZ. And it's worked.

Mr. MURRIN. That's indeed what I am suggesting, sir.

If I may just add another one which we sometimes forget about, virtually all of the initial work in the semiconductor field, which is now such a challenging one to us, resulted from government initiatives, particularly DOD initiatives, most particularly the U.S. Air Force sponsored programs.

So we do have, indeed, an array of outstanding success stories of cooperation between government and industry.

Senator HEINZ. Tom, I don't mean to be too interventionist. What you say is absolutely true, but it isn't the question I asked.

Mr. MURRIN. Well, what I'm implying, Senator, is, given this track record of pragmatic success, given the realities which you have identified so well as to the nature of our competition, I would think it imprudent not to openmindedly examine why some of those earlier ventures worked so well and whether or not they are relevant to today's situation.

Senator HEINZ. Let me ask you this.

Mr. MURRIN. And I think that's happened. I think that's coming.

Senator HEINZ. You've mentioned a number of things that the administration is talking about or doing. Which of them, if any, is going to make a whit of difference? Is there one of them that might make a significant difference or is this all pretty much just nibbling a little bit around the margin?

My impression is, it's the latter. We're not doing anything about the cost of capital. We're not doing anything, as yet, about education. We're not doing anything, as yet, about taking on the structure of foreign competition in some way, shape or form that levels the playing field, as far as I know. Either we've got a secret strategy or we don't have any at all as far as I can tell.

Mr. MURRIN. Well, as I've shared with you, sir, as a 6-month pseudoexpert in this town, I found it to be on occasion a bewildering experience and very frustrating most of the time and wondering if I shouldn't volunteer to go back to Pittsburgh and return to academia.

Senator HEINZ. You've answered my question.

Mr. MURRIN. At the moment, I am somewhat encouraged, particularly with the statements of the President and other leaders in the administration. I think they really hold promise of some substantial progress.

Senator HEINZ. Of the things that you mentioned earlier, which one do you think has the most promise? Do you think the idea of joint production ventures has a lot of promise?

Mr. MURRIN. I think that has a lot of near-term promise and I think it's the sort of thing we can move out on very quickly and it's one of the areas where, for example, our new advanced technology program at Commerce, albeit a modest one, one budgeted at $10 million, can begin to——

Senator HEINZ. How much was that again? $10 billion did you say?

Mr. MURRIN. Ten million. It's very modest.

Senator HEINZ. Ten million dollars?

Mr. MURRIN. Yes, sir. Hopefully, we will be back to make it billions rather than millions, but at the moment it's millions.

Senator HEINZ. You've got to hope for a $10 million program?

Mr. MURRIN. As a prototype of what could and should be done; yes, sir.

Senator HEINZ. How much did the Japanese spend just on research and development on HDTV last year?

Mr. MURRIN. Much larger sums.

Senator HEINZ. About $100 million maybe?

Mr. MURRIN. They've been doing this for, I'm told, 16 or 17 years and the aggregate investment was in the billions of dollars.

Senator HEINZ. That's right. Ten million spread across every technology strikes me as a little thin.

Mr. **Murrin**. Well, you asked me a question, sir.

Senator **Heinz**. I did.

Mr. **Murrin**. And I am attempting to reply.

Senator **Heinz**. I wish you were in a better position to give me the answers you would like to give.

Mr. **Murrin**. I am encouraged by the near-term prospects of manufacturing consortia. You've pointed out well that the problems we have in regard to education and capital, for example, are terribly difficult. They are going to take considerable time to resolve. But I am frankly encouraged that you and your colleagues here in the Senate and others in the Congress and my counterparts in the administration and indeed a lot of very thoughtful, insightful folks in the media, are for the first time, in my perception, at least striving to make these matters of global competitiveness top priority issues. I really think if we do that in a meaningful way we still have the resources in our great country to turn our situation around and reestablish our vigor. So I am guardedly encouraged, but it's a very, very difficult challenge, as we know.

Senator **Heinz**. Well, I see my time has expired. At some point I do want to follow up on this issue of joint production, either now or later.

Senator **Dixon**. May I say to my friend from Pennsylvania, if he would indulge me, we're going to have a time problem here in view of the fact that the chairman is in the Finance Committee and I have to leave here by 11:30. If my friend would indulge me, I wonder if we could do the next panel and I will yield my questioning time to my colleagues from Missouri and Pennsylvania. By doing that, we may be able to accommodate these witnesses in the timeframe.

Senator **Heinz**. May I make a brief comment then?

Senator **Dixon**. Of course. The Senator from Pennsylvania.

Senator **Heinz**. I am profoundly concerned about the administration's policy on joint production and antitrust. It flies against everything that people who have actually studied the issue as opposed to economic theorists have found out. I hope you will go and look at Mike Porter's analysis of what it takes for industries to actually be competitive. The heart and soul of it is competing. If you have joint production ventures, you can't compete. You are it. The only thing a joint production venture suggests is that our past policies have been a total failure. We haven't been able to generate competition.

If you look at Japan, somehow or other, whether it's VCR's, autos, TV's, semiconductors, HDTV's, they don't have one person; they don't have one manufacturer producing. They've got a minimum of six or seven or eight. They don't have three auto companies. They've got eight or nine. They have half the people we have in this country. And we're talking about "punt". Gee, we're a struggling little country here. We've got to get everybody together in one little boat so we can move the oars. The boat is sinking. At best, we are rearranging the deck chairs on it.

I've got to say that I hope somebody stops spouting this theory of just trying to plug a few leaks here and there when the boat is being overwhelmed by waves. Having people focus, I say to you, Tom, on some will-o-the-wisp possibility that joint production ventures would be our salvation, is nevertheless likely to just drill a bigger hole in the bottom of the boat by undercutting the principle of competition that America ought to stand for, and I would think that this administration wouldn't sink the ship of competition.

I am very distressed that there's so little thinking going on and so much posturing. The only positive thing I heard you say today is we've got an offsets policy. We're not going to continue to sign agreements where we sign our suppliers' life away. That's like saying we're going to stop shooting ourselves in the foot when we've already lost both legs.

I know you would like things to be different. I know you would like some better policies. But I've got to say in all candor, I'm getting pretty depressed. Thank you.

Mr. MURRIN. If I might comment quickly—may I, sir?

Senator DIXON. Absolutely, Mr. Secretary.

Mr. MURRIN. I am quite familiar with Professor Porter's views in this regard. I've read with interest the article in the recent Fortune in which he captures I think the essence of what you are addressing and Professor Porter served with us on the President's Commission on Industrial Competitiveness, so I was with him for 18 months there. And I have great respect for his academic observations and his thoughtful insights.

But my conviction, sir, that the prospect of production consortia holds great promise is in large measure borne of what the Japanese have been doing in this regard for several decades. In visiting there for over 25 years and having made an avocation of trying to analyze what they do, they have developed a mechanism of competing while they cooperate, something that we seem to have an intellectual hangup on.

I would opine respectfully that we can indeed, and occasionally do—and I think the aerospace industry is an example—cooperate effectively while we compete fiercely. I simply remind ourselves, if I may, of that and——

Senator HEINZ. I would love to have you provide information for the record about the Japanese competing where they have joint production ventures in either brand or directly competitive products. I've been to Japan. I never saw a factory like that. I saw all kinds of cooperation—research and development—lots of that. But I never saw that.

Senator DIXON. I don't want to interrupt this discussion. I want to say this has been very valuable and I'm delighted to hear all of it and share the views expressed very forcefully in many respects by both of you.

Mr. Secretary, your presence here has been very enlightening and we thank you for giving your valuable time to this committee.

Mr. MURRIN. Thank you. I'm happy, sir, to have the panel take over.

Senator DIXON. Thank you, Mr. Secretary.

On the second panel we have Mr. Jed L. Babbin, Deputy Under Secretary of Defense; and Dr. Allan Burman, Administrator-Designate of the Office of Federal Procurement Policy, OMB.

May I say, before you two gentlemen proceed, that at the conclusion of your remarks I'm going to yield to my colleagues from Missouri and Pennsylvania first. I am informed that Senator Shelby will relieve me at 11:30 should this go on beyond that time.

Please proceed, Mr. Babbin, and thank you for giving us your time today.

STATEMENT OF JED L. BABBIN, DEPUTY UNDER SECRETARY, DEPARTMENT OF DEFENSE

Mr. BABBIN. Thank you, Mr. Chairman. It's a pleasure to be here today.

Let me first say that my boss, John Betti, certainly wanted to be here and he sends his regrets and appreciates your indulgence.

Mr. Chairman, Senator Bond, I am pleased to be here today to discuss the reauthorization of the Defense Production Act. With your permission, I will summarize my written statement which I request that you include in the record.

Senator DIXON. It will be included in full, Mr. Babbin.

Mr. BABBIN. The defense industrial and technology base is one of the cornerstones of our strategy of deterrence. We have chosen not to match our potential adversaries man-for-man or bullet-for-bullet. Instead, we have chosen to base our deterrence on the superiority of our technology and the skill and training of our forces.

To maintain this deterrent, we must compete in areas of advanced technologies. In this competition, and in many other aspects of this issue, the Defense Production Act is a useful tool.

The DPA provides a way to ensure the availability of resources needed for critical defense production. For example, when an explosion and fire destroyed half of the U.S. ammonium perchlorate production capacity in May 1988, title I authority was used to allocate existing scarce ammonium perchlorate to systems on a priority basis and to expedite construction of a new plant.

Title III authority has been instrumental in establishing a domestic production capability for critical products and materials. High purity quartz fiber, a material with several applications, including stealth technology, is just one case where title III authority has been used to establish a domestic source.

Provisions contained in title VII of the DPA provide authorities that are instrumental in preparing for, and responding to, national emergencies. These include planning for surge and mobilization production capacity, voluntary agreements to improve preparedness plans, and authority for the President to prevent foreign interests from acquiring or merging with a U.S. company if such a merger or acquisition would impair national security.

Your letter inviting our testimony asks four questions about our ability to monitor and maintain defense production. The first question concerns the adequacy of systems for gathering and assessing data on the extent of foreign dependencies among prime contractors and subcontractors. We have some information about procurements made directly by the DOD; however, our understanding of the lower subtier supplier levels supporting prime contractors is not as complete. Although systems and procedures for gathering industrial base data are already in place and data are routinely collected, a better job needs to be done in both gathering and integrating this information. We are in the process of doing just that. In

April, experts knowledgeable about 15 different data systems will be meeting to initiate technical development of a single unified database which will include subtiers and the problem of foreign sourcing.

I believe we can make better use of the information we are already collecting and, when necessary, augment that information with special studies relating to specific items or weapon systems. I should also note that the fiscal year 1989 Defense Authorization Act requires us to develop a process for performing an industrial base analysis on each new major acquisition program and provide the results of several test analyses to Congress by February of next year.

Senator **Dixon**. That's my amendment, Mr. Babbin.

Mr. **Babbin**. Yes, sir. The overall framework for gathering and assessing data is in place. We just have to do a better job of managing it.

The next question addresses our mutual concern about a foreign source becoming an exclusive supplier of critical equipment or technology. Such dependencies raise the risk that foreign interests may be able to influence U.S. policy by leveraging our need for their products or technology. Accordingly, DOD attempts to avoid these dependencies. Nevertheless, because the world economy is becoming increasingly interdependent, it seems to be unwise to require everything the U.S. buys to be manufactured in the United States.

The DOD has ways to deal with foreign dependencies. For example, under title III of the DPA, it has been shown to be a useful tool for establishing domestic sources. In addition, DOD uses some procurement restrictions to maintain a domestic production base for critical products like bearings and machine tools.

The third question relates to the Federal Government's role in fostering domestic defense related technologies. Because the most advanced defense systems typically incorporate the latest technology, DOD sponsors research in areas that will lead to improvements in system performance. We believe industry can be encouraged to maintain an interest in defense technology by making DOD a better customer. Through the Defense Management Review we are implementing many of the improvements and recommendations of the Packard Commission and working to eliminate nonvalue-added procedures. Further, we are examining the problems of capital formation which are troubling defense industries and investors.

The fourth question deals with the transfer of defense developed technology into the commercial market. Effective mechanisms for transferring defense research to the commercial sector are available. Statutes such as the Stevenson-Wydler Technology Innovation Act, the Federal Technology Transfer Act, as well as Presidential Executive Order 12591, provide authorities to the DOD and other agencies that allow commercialization of Federal technology to work effectively.

Cooperative R&D between Federal laboratories and non-Federal parties can be accomplished without the constraints procurement rules often impose because such R&D efforts are treated as cooperation, not procurement.

In addition, reports generated as a result of DOD sponsored research that are not classified or otherwise restricted are made available to the public through the National Technical Information Service. The DOD also has helped establish research consortia like SEMATECH which undoubtedly will benefit commercial markets.

I want to commend the committee, as Mr. Murrin did, for its effort to update and reauthorize the DPA. A more detailed explanation of the Department's views on the bill is included in my written statement.

Let me just briefly point out that we do strongly endorse the reauthorization of the Defense Production Act. Thank you, Mr. Chairman. I would be pleased to answer any questions you and other Senators may have.

[The complete prepared statement of Jed Babbin follows:]

STATEMENT BY MR. JED BABBIN TO THE

SENATE COMMITTEE ON BANKING, HOUSING AND URBAN AFFAIRS

MARCH 8, 1990

Mr. Chairman and members of the Committee, I am pleased to be here to discuss the Defense Production Act (DPA).

The defense industrial and technology base is one of the cornerstones of our strategy of deterrence. We have chosen not to match our potential adversaries man-for-man or bullet-for-bullet. Instead, we have chosen to base our deterrence on the superiority of our technology and the skill and training of our forces.

To maintain this deterrent we must compete in areas of advanced technologies. As the September 1989 edition of "Soviet Military Power" stated, ".. the greatest challenge to the U.S. technology and industrial base will almost certainly come from the United States' own allies. Thus, the United States must succeed in this 'friendly competition' with advanced Western industrial states if its economic power, and the West's system of collective security, is to endure."

In this competition, and in many other aspects of this issue, the Defense Production Act is a useful tool.

The letter inviting our testimony asks four questions about our ability to monitor and maintain defense production. The first question concerns the adequacy of systems for gathering and assessing data on the extent of foreign dependencies among prime contractors and subcontractors. We have some information about procurements made directly by the DoD; however, our understanding of the lower sub-tier supplier levels supporting prime contractors is not as comprehensive. Although systems and procedures for gathering industrial base data are already in place and data are routinely collected at the Service's major commands and defense agency offices, a better job needs to be done integrating this information. We are in the process of doing that. In April, experts knowledgeable about 15 different data systems will meet to initiate technical development of a database that will provide more information about these subtiers, including foreign sourcing.

I believe we can make better use of the information we are already collecting, and, when necessary, augment that information with special studies relating to specific items or weapon systems. I should also note that the Fiscal Year 89 Defense Authorization Act requires the DoD to develop a process for performing an industrial base analysis on each new major acquisition program and provide the results of several test analyses to Congress by February 1991. The overall framework for gathering and assessing data is in place. We have to do a better job at managing it.

The second question addresses our mutual concern about a foreign source becoming an exclusive supplier of critical equipment or technology. Such dependencies raise the risk that foreign interests may be able to influence U.S. policy by exploiting our need for their products or technology. Accordingly, DoD attempts to avoid foreign dependencies. Nevertheless, because the world economy is becoming increasingly interdependent and it would be unwise to require everything the DoD buys to be manufactured in the United States. The Defense Advanced Research Projects Agency is looking at foreign dependency and is developing a method for assessing vulnerability based on market concentration.

The DoD does have ways to deal with foreign dependencies. For example, Title III of the DPA has been shown to be an effective mechanism for establishing a domestic source. In addition, DoD uses procurement restrictions to maintain a domestic production base for critical supplies like bearings and machine tools.

The third question relates to the Federal Government's role in fostering domestic defense related technologies. Because the most advanced defense systems typically incorporate the latest technology, DoD sponsors research in areas that will lead to improvements in system performance. We believe industry can be encouraged to maintain an interest in defense technology by making DoD a better customer. Through the Defense Management Review we are implementing the Packard Commission recommendations and working to eliminate non value added procedures. Further, we are examining the problems of capital formation which are troubling defense industries and investors.

The fourth question deals with the transfer of defense developed technology into the commercial market. Effective mechanisms for transferring defense research to the commercial sector are available. The Stevenson-Wydler Technology Innovation Act of 1980, the Federal Technology Transfer Act of 1986, and Presidential Executive Order 12591, "Facilitating Access to Science and Technology", provide authorities to the DoD and other agencies to make commercialization of Federal technology work effectively.

In accordance with this statutory direction, cooperative R&D between Federal laboratories and non-Federal parties is treated as cooperation, not procurement, and can be accomplished without the constraints procurement rules can impose. In addition, all reports generated as a result of DoD sponsored research that are not classified or otherwise restricted, are made available to the public through the National Technical Information Service. The DoD has also helped establish research consortia like SEMATECH which will undoubtedly benefit commercial markets.

The primary reason for my appearance before the Committee is to discuss the Defense Production Act. The DPA is a very important tool for ensuring the availability of resources needed for critical defense production. Title I of the DPA allows us to establish priorities and allocate resources when scarcities exist. For example, when an explosion and fire destroyed half of the U.S. ammonium perchlorate production capacity in May 1988, Title I authority was used to allocate existing scarce ammonium perchlorate to systems on a priority basis. In addition, construction of a new ammonium perchlorate plant was expedited by using Title I authority to assign priority ratings to orders for construction materials and equipment.

Title III of the Defense Production Act provides a way to create or expand manufacturing capacity for certain products and materials incorporated into advanced defense systems. Typically these materials or products are on the leading edge of technology and lack the mature commercial market needed to justify the risk of establishing a production facility. High purity quartz fiber, a material with several applications including stealth technology, is one example where Title III has been instrumental in establishing a domestic production capability.

Provisions contained in Title VII of the Defense Production Act provide authorities that are instrumental in preparing for, and responding to, national emergencies. These include planning for surge and mobilization production capacity, voluntary agreements to improve preparedness plans, and authority for the President to prevent foreign interests from acquiring or merging with a U.S. company if such a merger or acquisition impairs national security.

I appreciate the efforts made by the Committee to update this very important legislation. While we support those provisions in S.1379 that are similar to provisions in the Administration's proposed Bill, we do take exception to the following:

1. Section 2, Declaration of Policy, page 5

   Delete lines 7 to 10 and replace with the following:

   > "To meet these requirements, it is the policy of Congress to take appropriate steps to maintain and enhance the defense industrial and technology base and to develop industrial preparedness plans and programs to reduce the time required for industrial mobilization or to respond to actions occurring outside the United States which could result in the termination or reduction of the availability of strategic and critical materials,

> including energy, which would adversely affect national security In order to ensure the National Defense Preparedness, it also is necessary to assure domestic energy supplies for national defense needs."

The existing DPA language, which has been in existence since the early 50s, makes it the development of preparedness programs national policy. The S.1379 language simply states that "the Act affords to the President an array of authorities to shape defense preparedness programs." A more explicit declaration of policy to develop preparedness programs provides a stronger foundation for ongoing and future industrial preparedness activities and is consistent with other recent legislation, i.e., the National Defense Authorization Act, FY 1989.

2. Section 111, pages 5-11. Throughout the section delete the references to "critical technology." The purpose of Title III is to expand productive capacity and supply for materials or industrial resources. Because of this, we may buy items which incorporate certain technologies, but we do not purchase technology. In fact, the criteria which must be certified by the President are extremely difficult to apply to technology especially in the area of demand and capacity analyses. Since it is unclear how we would or could purchase critical technology per se, references to it should be deleted.

3. Section 112 requires reimbursement to the proposed DPA Fund for all industrial resources purchased with Title III funds and transferred to other Government programs. This will only be necessary if such a fund is established. All references to the Stockpiling Program should be deleted since such transfers should be made only when the material is needed in the Stockpiling Program.

4. Section 113 requires a onetime transfer of $200 million from the National Defense Stockpile Transaction Fund to the DPA Fund. It also would transfer up to $10 million annually from the sale of stockpile assets to the DPA Fund. We are not in favor of rendering the stockpile program less effective, which is what this provision would do.

5. Section 114 would change the responsibility for the preparation of the annual offset report required by

section 309 from the President to the Secretary of Commerce and would require U.S. firms to file separately contract by contract reports each time they concluded "an offset arrangement exceeding $5 million in value." The administration opposes this proposed amendment and has proposed deletion of the offset reporting requirement in its entirety.

6. Section 121 requires that small business concerns be given the opportunity to participate in all programs to maintain and strengthen the industrial base. This provision is unnecessary and could hinder existing programs dealing with small business concerns.

7. Section 122, (4). This adds a definition for "domestic source" to the definition section (sec. 702) of the Defense Production Act of 1950. This definition is added because of the preference provided for domestic sources in other sections of the bill (e.g., sections 214(b) and 221). A preference for a "domestic source" should be opposed due to problems in implementing such a preference resulting from its ambiguous definition.

   The definition of "domestic source" in the bill is "a business entity that performs substantially all of the research and development, engineering, manufacturing, and production activities required of such firm as a defense contractor in the United States or Canada." What meets the "substantially all" criterion is not clear. Also, this definition would be difficult to apply to a multinational defense contractor that manufactures one product line entirely in the United States or Canada. In contrast, what qualifies as a domestic end product has been well defined pursuant to the Buy American Act (i.e., an end product manufactured in the United States and at least 50% of its components are produced in the United States).

8. Section 122, (11). This adds a definition for "services." This should be clarified so that the word "includes," as used in the definition is not meant to be limiting and does not exclude other "services" and that the types of services enumerated are for illustrative purposes only.

   During energy supply emergencies, the President may find it necessary to exercise DPA section 101(c) contract priority authority to construct or maintain energy facilities, including the Strategic Petroleum

Reserve (SPR) or Federal electric transmission and distribution networks, both important to defense operations and production. Inclusion of "services" would permit a priority rating to be given to the Government's contracts with such contractors, assuring their priority attention to the SPR's or electric networks' needs during a national emergency, and correspondingly excusing the contractors from potential liabilities to their other customers by virtue of their giving priority to the Government's needs.

9. Section 125 amends DPA section 708 (which authorizes establishment of voluntary agreements) by broadening the authority to establish "sanctioned industry consortia" (which is defined to include voluntary agreements) and by broadening protection against criminal or civil antitrust actions for sanctioned activities relating to industry consortia.

   The Administration opposes expanding the anti-trust immunity in the DPA as proposed by S.1379. Anti-trust treatment of joint ventures is being considered by Congress in the context of other, more general, legislative proposals. The Administration has made no determination as to whether, or in what form, such legislation should be enacted.

10. Section 127 amends DPA section 721, (Exon-Florio provisions) concerning investigations of mergers, acquisitions, and takeovers by or with foreign persons that could affect national security. We do not support the following proposed changes in this section:

    Substituting "evidence" for "credible evidence" as one of the findings that the President must make before he can take action to suspend or prohibit a foreign acquisition on national security grounds. This change sends the wrong message to foreign investors that we are tightening our investment policy.

    Substituting "completion" of the transaction as a trigger for possible Presidential action. Waiting until the transaction is completed not only may compromise national security, but a Presidential action prohibiting the transaction may do harm to the domestic firm by altering market forces after the fact. Moreover, by focusing on the fact of completion and not on what action the foreign interest might take, the change would raise concerns that the U. S. regards foreign investment per se as undesirable, regardless of the actions of the acquiring person.

The failure to mention control in the proposed new language may raise needless questions as to what kind of relationship must exist between the foreign person and the U.S. company. If there is no control by a foreign person, there is no case for the Presidential action under the Exon-Florio provision as currently drafted.

11. Section 134 amends DPA section 710 (which authorizes the President to employ persons without compensation to carry out the Act) concerning disclosure of financial interests of anyone employed without compensation to carry out the provision of the Act.

    We support the elimination from subsection (1) of the requirement for Federal Register publication of the financial statements of "Without Compensation Employees." Section 9(b) of the Administration's bill, however, would go further and eliminate any requirement for public disclosure of these financial statements and recommend enactment of the amendments which section 9-11 of the Administration's bill would make to the existing DPA section 710 and other statutes regarding Executive Reserves.

12. Section 201 establishes the Industrial Capabilities Committee and states the Committee's responsibilities. The composition of the Committee is not specified, yet it clearly would require civil agency participation, if not chairmanship. The responsibililties are not strongly reinforced by required actions. Only (b) (4) requires that a recommendation be made to the President, in this case, on the results of a review of industrial policy objectives, laws and regulations. This provision would best be left to the discretion of the Executive branch.

13. Section 202 designates the Secretary of Defense as a member of the Economic Policy Council and establishes a Defense Working Group within the President's Economic Policy Council.

    The Secretary or Deputy Secretary do participate in meetings of the Council when DoD is effected, and in a sense, are already de facto members. However, we do object to legislation that mandates how the President should organize his administration.

14. Section 211 provides that contractors shall be encouraged to invest in advanced manufacturing technology, equipment and processes.

    Subsection (1) provides for an increased profit for contractors that make such investments. Federal Acquisition Regulation (FAR) Part 15.905-1(d) and the DoD FAR Supplement (DFARS) Part 215.970.1(c) currently provide that the contribution of contractor capital investments to efficient and economical contract performance shall be considered in developing profit objectives. DFARS 215.970-1(c)(3) states that facilities capital investments that enhance the industrial base should be analyzed and that investments in state-of-the-art technology which reduce costs or yield other tangible benefits should be rewarded. Subsection (1) of Section 211 is unnecessary since DoD already considers investments in advanced production equipment in the establishment of profit.

    Subsection (2) requires the assignment of increased weight to source selection criteria relating to the efficiency of production. We believe that program officers should have the flexibility to determine what source selection criteria should be utilized for their particular programs and relative importance of each criterion. We are not in favor of restricting this flexibility by establishing mandatory source selection factors such as proposed by this subsection.

15. Section 212(a) requires the President to establish an acquisition policy which would require, to the maximum extent practicable, that the acquisition plan for any major system acquisition provide for contract solicitation provisions which encourage competing offerors to use (in the performance of the contract) modern industrial facilities, production systems and equipment that increase the productivity of the offerors and reduce the costs of production. Such an acquisition policy already exists in DoD Directive 5000.44, "Industrial Modernization Incentives Program" (IMIP). This policy Directive is incorporated in DFARS 215.872, "Capital Investment Incentives." This existing policy requires DoD to provide incentives, encouraging contractors and subcontractors to, among other things, enhance productivity, accelerate the

development and implementation of advanced manufacturing technology shorten lead time, and increase industry surge and mobilization capability. This policy already requires DoD Components to actively encourage IMIP participation by industry and to assess IMIP in their acquisition plans Therefore, DoD opposes section 212 because an acquisition policy such as the one proposed is already in place.

16. Section 213 requires the President to establish a policy authorizing a departmental secretary to restrict to domestic sources competition for all or a portion of a contract opportunity to fulfill the requirement for supplies that are the products of or are manufactured through the application of a critical technology DoD opposes the proposed policy because 10 U.S.C. 2304(c)(3)(A) already provides authority to use other than full and open competition when it is necessary to award a contract to a particular source or sources in order to maintain a facility, manufacturer or producer for furnishing property or services in case of a national emergency or to achieve industrial mobilization. This authority is implemented in section 6.302-3 of the FAR which states that use of this authority may be appropriate to create or maintain the required domestic capability for production of critical supplies by limiting competition to items manufactured in the United States or Canada In FY88, DoD awarded $5 9 billion in contract awards under this authority.

17. Section 214(a) requires the President to prescribe an acquisition policy authorizing a departmental secretary to make a noncompetitive contract award pursuant to the authority provided in 10 U.S.C. 2304(c)(3)(A) for the procurement of any critical item of supply from a domestic source in order to maintain at least one domestic source determined to be essential to national security. DoD opposes the proposed policy because 10 U.S.C 2304(c) 3 (A) has been implemented in FAR 6.302-3 and already provides the authority proposed in the bill. DoD has used this authority on numerous procurements.

    Section 214(b) provides that the President shall prescribe a policy requiring that the solicitation for the procurement of any major system: specify the minimum percentage of the total estimated value of the contract that is to be performed by one or more domestic firms; require the submission of a subcontracting plan to attain the percentage specified; specify that a source selection factor not to exceed 10% of the total evaluation points relate to the domestic percentage requirement and the extent to which each offer meets or exceeds the specified percentage; provide that the percentage specified by an offeror shall be a material element of any resulting contract; and require the contractor to identify each subcontractor counted towards attainment of the specified percentage. This provision is similar to a bill introduced earlier this year (S.495). DoD strongly opposed the bill and strongly opposes this provision for the reasons outlined in the following paragraphs.

The requirement of this subsection for major system solicitations to specify the minimum percentage of the contract value that is to be performed by domestic firms will be viewed as a "protectionist" measure by our allies, invite retaliatory action, and result in inefficient use of defense resources. DoD opposes this requirement since the Buy American Act and the Balance of Payments program currently provide for a significant preference for domestic products (50% price evaluation differential is also applied to offers of foreign products).

This evaluation differential is also applied to domestic products if 50% or more of the components are foreign.

In order to promote rationalization, interoperability and standardization with our allies and in order to promote the most efficient use of defense resources, DoD has entered into agreements to waive the Buy American Act in return for our allies removing any similar barriers. Also, pursuant to the Trade Agreements Act of 1979 (19 U.S.C. 2501), similar Buy American Act waivers are granted for qualified purchases from sources in countries that have signed the General Agreement on Tariffs and Trade. The requirement of this subsection for DoD to give a preference at source selection to offerors that propose a higher domestic content percentage would be contrary to these international agreements.

DoD promotes the use of commercial or non-developmental items (NDI), partly as a result of recent legislation, in order to satisfy DoD requirements in a more economical manner by obtaining items which do not need to be developed or customized for DoD. This subsection would frustrate this effort by imposing several additional DoD unique data requirements on prime contractors and by discouraging the use of foreign commercial subcontractors. Offerors proposing NDI supplies, that have a lower percentage of domestic content than the competition, would be at a disadvantage during proposal evaluation or would have to develop domestic suppliers, which would defeat the objective of the DoD initiative.

Section 214(c) requires the President acting through the Secretary of Defense to identify and publish a list of critical items in the FAR. This subsection should be deleted. Picking "winners and losers" will not achieve our objective of retaining our manufacturing technological and scientific leadership to continue to build superior weapon systems. Indeed, it may be counterproductive to subsidize one industry over another since the production of every major weapon system touches virtually all industrial sectors either directly or indirectly.

18. Section 221 of the proposed bill provides that a policy shall be established which would require the application of price evaluation factors to the offers of nondomestic sources when necessary to counter any price advantage the nondomestic source may have over a domestic source as a result of any "unfair advantage." "Unfair advantage" is defined as a foreign source that has been subsidized or the nonapplication of socioeconomic programs to a foreign source that are applicable to a domestic source. DoD opposes this section because it would be very difficult to implement. For example, it would be very difficult to determine when a foreign firm has received a subsidy. The definition of "subsidies" varies greatly under the laws of different nations and the GATT and variously excludes and includes direct payments, tax breaks, and market protection. A 1986 study concluded that foreign firms do not enjoy an unfair competitive advantage from the non-application of U.S. socioeconomic programs because many countries impose similar requirements through their national legislation and regulations.

19. Section 222 provides that a contractor that has engaged in an unfair trade practice, shall be subject to suspension and debarment. There is enough flexibility in the current regulations (FAR subpart

9.4) to consider the "unfair trade practice" factors listed in section 222 as a basis for suspension or debarment. We oppose this provision because suspension and debarment are business decisions made to protect the Government. Section 222 would transfer them to a punishment.

This concludes my statement. I want to thank the Committee for inviting me here today and will be happy to answer any questions.

Senator DIXON. Thank you, Mr. Babbin.

We will hear from Dr. Burman, the Administrator- Designate of the Office of Federal Procurement Policy, OMB. Mr. Burman, thanks for being here.

STATEMENT OF ALLAN V. BURMAN, ADMINISTRATOR-DESIGNATE, OFFICE OF FEDERAL PROCUREMENT POLICY, OFFICE OF MANAGEMENT AND BUDGET

Mr. BURMAN. Thank you very much, Mr. Chairman.

Mr. Chairman and members of the committee, I am the Administrator-Designate for Federal Procurement Policy. Last Thursday, as a matter of fact, the Senate confirmed my appointment to that position, so I now will formally hold that title.

If I may, as Mr. Babbin did, I would like to submit my statement for the record and briefly summarize it.

Again, I'd like to commend the committee for its efforts to reauthorize and amend the Defense Production Act. As you know, it contains a number of authorities that are vital to our national security.

The administration has submitted a proposed permanent reauthorization for the Defense Production Act. Senator Garn has just recently introduced this legislation as S. 2168.

If I may, I'd like to address some of the key provisions of S. 1379 and then briefly respond to the four questions you asked in your letter of invitation.

First, with regard to S. 1379, there are a number of areas where the administration proposal and S. 1379 are very similar. These include the addition of services to Title I of the Defense Production Act, increasing the congressional approval threshold for title III projects from $25 million to $50 million, and the repeal of section 708(a) of title VII. This repeal will provide antitrust protection for voluntary actions taken by U.S. oil companies to fulfill oil supply obligations under NATO and other agreements. We certainly support all these measures.

There are other areas, however, where the administration proposal differs from S. 1379 and these are differences that we need to work out with the committee.

I'd like to mention a few of these concerns. A full discussion of these and other concerns is included in my prepared remarks.

Senator DIXON. Pardon me, Mr. Burman, but may I say your prepared remarks will be reproduced in the record in full.

Mr. BURMAN. Thank you very much, Mr. Chairman.

First, the new section 304 of the act would set up a revolving fund to carry out the purchase guarantee program. I worked with the committee in 1984 in the Congress when the title III provisions were set up. I believe that the system that we established back then for determining support for critical technologies provides very useful controls for both the administration and the Congress and also considerable visibility for these projects. Therefore, the administration would prefer the current arrangement.

With regard to offsets, we do not favor a new real time reporting requirement. We have done four offset reports now and they have shown that, on balance, sales with offsets often do have net economic benefits compared to no sales at all. Moreover, the administration is tasked to continue to report to Congress on the success of its negotiations with foreign countries to reduce the adverse effects of offsets. Given the results of the previous studies, and this new requirement, we would recommend that we not have additional reporting requirements.

There is also new language in section 708 of the bill that extends the antitrust waivers to all kinds of joint ventures. We are well aware of the importance of this issue and the need to remove unwarranted antitrust barriers. As Mr. Murrin said, the President yesterday made a number of comments to the American Electronics Association, including some statements with regard to joint ventures that would improve this situation somewhat. I don't plan to go into detail on those, but we would certainly be happy to work with Congress with regard to any appropriate legislation that would be required for these kinds of ventures.

Section 127 of S. 1379 amends the DPA section 721 concerning investigations of mergers, acquisitions and takeovers by foreign persons that could affect national security. These are the so-called Exon-Florio provisions. These establish a standard that in order for a President to exercise his authority to suspend or prohibit a merger he must find credible evidence that the foreign interest might take action that impairs national security.

The amendment would, among other things, weaken the evidentiary standard by removing the standard that the evidence be credible. We believe that the current authority is adequate and that the changes would imply that the United States is concerned about foreign ownership per se, which would contradict our longstanding policy of welcoming foreign investment.

There are also in S. 1379 a number of provisions that would task the President, working through the Administrator for Federal Procurement Policy, to take action to invest in manufacturing equipment to purchase from domestic sources in certain instances and to make use of modern facilities. We believe similar provisions exist in the Federal Acquisition Regulation [FAR] with regard to a number of these or in the defense supplement to the FAR, and we would be happy to discuss them with the committee and, where appropriate, to look toward applying them on a governmentwide basis.

We do oppose provisions that run counter to international trade commitments we have made and I describe these concerns in my prepared remarks.

Finally, Mr. Chairman, with regard to the four specific questions that I was asked to respond to today, they deal with assessing data on the extent of foreign dependencies, concerns about foreign companies becoming sole source suppliers of national security items, the efforts of the Government to develop domestic-based defense-related technologies and mechanisms to help transfer high technology defense research into benefitting civilian-related technologies.

On the data issue, there is no single governmentwide system that identifies such dependencies. One of the areas that my office has responsibility for is the Federal Procurement Data System. That system gives information on all of the contracts that the Government has with private industry, but it does not give information on raw materials that are included in those contracts or who supplies them. Defense has identified some items needed under title III of the Defense Production Act and there are a series of reports, as has been mentioned, required in the 1990 Defense Authorization Act that address these issues and I suspect we need to look to those reports to see what suggestions we might have to deal with them.

On foreign companies becoming sole source suppliers, we have concerns any time the Government is put in such a situation. The basis of our acquisition system is full and open competition so that the Government can get the best product at the best price and that is something that, as Administrator for Federal Procurement Policy, I strongly support.

There are provisions, however, in the Competition in Contracting Act [CICA] that allow agencies to exclude sources from competing for contracts in the interest of national defense and in the interest of industrial mobilization. I asked to see what kind of use has been made of those provisions, and I have some data from the Federal Procurement Data System that suggests in 1988 some $9.5 billion and some 3,000 contract actions took place that made use of these provisions. So there are some mechanisms to try to deal with these kinds of issues.

On fostering the development of technologies, clearly one thing that the Government is doing that has a substantial effect is the $71 billion that we are spending in direct R&D funding or we are proposing to spend in the 1991 budget. There are also a number of areas that Mr. Murrin commented on from the President's speech yesterday to create the environment that reduces the cost of capital and removes unwarranted barriers to joint ventures and to improve the trade situation with our allies, as well.

Finally, on transferring technology, a number of actions have been taken. I know that you have been very much involved in that issue, particularly with the question of technical data rights and how those rights should be treated.

We are now working on a governmentwide rule based on the principle that the Government should buy only the data rights it needs and leave the proprietary rights to commercialization with the developer. I think that this will go a long way toward meeting some of the concerns that have been raised with regard to this issue and we hope to have something on this this spring.

In conclusion, Mr. Chairman, we very much support the committee's efforts to reauthorize the Defense Production Act. We would hope to work with you to achieve this result and I'm happy to take any questions.

[The complete prepared statement of Allan V. Burman follows:]

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

OFFICE OF FEDERAL
PROCUREMENT POLICY

NOT FOR RELEASE UNTIL
DELIVERY MARCH 8, 1990

STATEMENT

OF

ALLAN V. BURMAN

ADMINISTRATOR DESIGNATE

FOR FEDERAL PROCUREMENT POLICY

BEFORE THE COMMITTEE ON

BANKING, HOUSING AND URBAN AFFAIRS

UNITED STATES SENATE

MARCH 8, 1990

Mr. Chairman and Members of the Committee:

I appreciate the opportunity to appear before your Committee to discuss S. 1379, a bill to reauthorize and amend the Defense Production Act of 1950, and for other purposes. The authorities granted by the Defense Production Act (DPA) are important to our national security and I look forward to working with the Committee to help achieve its reauthorization.

In some respects, S. 1379 is similar to the draft bill to reauthorize the DPA submitted by the Administration in January, 1990. We support provisions in S. 1379 that are similar to those in the Administration's proposed bill. However, there are, many provisions in S. 1379 that differ significantly from the Administration's proposal. My testimony, this morning, will review the authorities granted by the DPA and focus primarily on the major provisions of S. 1379 that differ from the Administration's proposal.

Title I. Priorities and Allocations

The authority in Title I of the DPA assures prompt performance on certain defense procurement contracts. Under this Title priority ratings are established which require contractors to give preference to procurement contracts required for national security purposes over other contracts. In addition, Title I contains limited authority to allocate materials and facilities for defense purposes. This authority was used most recently to allocate ammonium perchlorate which was in short supply because of the destruction of one of the two manufacturing plants in Nevada. The ammonium percholate was allocated to defense programs having the highest priority. In addition, in building the new ammonium perchlorate plant, priority ratings were used to order materials and supplies to expedite construction.

Proposed Changes to Title I

Section 131 of S. 1379 would amend Section 101 of the DPA by adding "Services" to Subsection 101(c)(1) thereby permitting the President, upon a proper finding, to require the priority performance of service contracts or orders to maximize domestic energy supplies. We support the addition of "Services" to Section 101. We do not, however, understand the additional change proposed by Section 131; i.e., to require that Presidential findings to use the authorities conveyed by Subsection (C)(1) be submitted to Congress. If the intent is to limit the President's ability to act to those situations where Congress approves the findings, we would oppose the change. This requirement could impede the President's timely action and is not presently required by the DPA.

Title III. Expansion of Productive Capacity and Supply

Authority to expedite productive capacity and supply needed for the defense effort is contained in this title. Section 301 contains loan guaranty provisions that can be used by procuring agencies to assist contractors in securing working capital and equipment needed for the performance of defense contracts. Guaranties are provided on loans made by public and private financing institutions. Section 302 provides authority for direct loans from the Government. These authorities have not been used in the last several years, but they could be invaluable at some point and they should be retained.

Section 303 provides authority to make purchase and purchase commitments to foster industrial expansion and supply of strategic and critical materials. Ten projects have been initiated under this authority in the last 6 years.

Proposed Changes to Title III

S. 1379 would add a new Section 304 to Title III and would amend the existing Section 309. The proposed Section 304 would establish a DPA fund to carry out the purchase guarantee purposes of Section 303. The amendments to Section 309 would change the annual offset report.

Present Section 303 Funding Practices: After projects are identified by Defense as meeting the requirements of the Act, they are forwarded to OMB for approval and inclusion in the budget. Congress approves specific projects and funds are appropriated in the Defense Appropriations Bill. Appropriated funds are generally obligated under Section 303 in phases: Phase I funds the contractor to produce a limited quantity of the item for testing; phases II and III provide purchase guarantees towards the sale of specified quantities. The purchase guarantees are not exercised if the contractor successfully markets the materials to weapons producers or other Government sources. If the supplier is not successful in marketing the specified quantity, the guarantee clause will be exercised and the product will be purchased by the Government.

Proposed DPA Fund: The DPA fund proposed by Section 113 of S. 1379 would be capitalized by a transfer of $200 million from the unobligated balance of the National Defense Stockpile Transaction fund. The DPA fund would also receive annually the first $10 million resulting from any sales of excess stockpile materials. Purchase guarantees would be supported from the DPA fund. If materials are procured under the guarantee, they could be resold to other Government program offices or the National Defense Stockpile and the fund would be reimbursed. An important aspect of the proposed fund is that it would be liable for only one-third of the value of the purchase guarantee. This would mean that a fund of $200 million, for example, could be used to support project guarantees valued up to $600 million. The rationale for this is that it would be unlikely that all contractors would need to exercise their purchase guarantees at the same time, and there would be no need to maintain a fund equal to the full value of all the guarantees.

Concerns About the Proposed DPA Fund: There are several concerns about the establishment of the proposed DPA fund.

First, the current system for funding Section 303 projects is adequate and provides controls for both the Administration and Congress. Second, it is not clear how contingent liability resulting from guaranteeing purchases that exceed the value of the fund would be treated. Third, revolving funds (such as the proposed DPA fund) are most useful when there are frequent transactions as in industrial-type funds where materials are being sold and replacement quantities purchased on a repetitive or recurring basis. There is not enough activity in the present Section 303 program to require such a fund. Finally, the accountability and visibility of transactions is far greater in the normal annual budget review and approval process than in transactions funded by revolving funds.

Amendments to Section 309

Section 114 of S. 1379 would change the responsibility for the preparation of the annual offset report required by Section 309 from the President to the Secretary of Commerce. Also, it would require U.S. firms to file separate contract-by-contract reports each time they concluded "an offset arrangement exceeding $5 million in value."

The reporting requirements now contained in Section 309 were specified by the DPA Amendments of 1984 and expanded in the DPA Amendments of 1986. Four annual reports have now been prepared pursuant to Section 309 and a fifth is in final preparation. These reports also respond to Section 825 of the FY 89 National Defense Authorization Act which contains some duplicative as well as additional requirements. The reports indicate that offsets have averaged about $2.5 billion annually during the 1980-87 period; and they conclude that offsets, in general, do not adversely affect the U.S. economy. Sales with offsets, for example, often have net economic benefits, as compared with no sale at all.

During the next few months, most reporting requirements now specified in both the DPA and the FY 1989 DOD Authorization Act will be completed. The only remaining requirement contained in the 1989 DOD Authorization Act, requires the President to report to Congress each year for three more years regarding the progress of negotiations with foreign countries to limit the adverse effects of offsets on the industrial base of the U.S. and foreign countries. Accordingly, and in view of the President's continuing responsibility to report under the 1989 DOD Authorization Act, it is recommended that the proposed amendment to Section 309 be deleted and that the Section be repealed.

In addition to expanding the offset report requirements, Section 114 of S. 1379 changes company reporting of offsets from a periodic accounting of their offset activities to a continuous reporting requirement on individual agreements. Under Section 114, companies would file separate reports, in accordance with regulations to be issued by the Secretary of Commerce, each time they concluded "...an offset arrangement exceeding $5 million in value..." In addition to being burdensome, this approach would result in a data base covering fewer offset obligations than has already been collected under current law. Clearly, additional costs and burdens would be incurred by both industry and Government without any clearly perceived benefits.

Section 114 also shifts responsibility for preparation of the President's annual report on offsets from OMB (where it has been since 1984 as envisioned by the Conference Committee which created the original DPA 309 requirement) to the Department of Commerce. The Administration believes that the President should retain the prerogative of assigning the reporting responsibility. Moreover, the present OMB-chaired interagency process has proven to be an effective mechanism for preparation of the reports.

Title VII. General Provisions

Title VII of the DPA contains general authorities for encouraging small business participation in programs authorized by the DPA. In addition, it defines various terms for the purposes of the Act; authorizes delegations of the authorities it confers to the President; and grants U.S. district courts jurisdiction over violations of the Act. Section 708 provides antitrust protection for the actions of private companies who carry out "voluntary agreements" to help provide for the defense of the U.S. through the development of preparedness programs and expansion of productive capacity. Section 710 provides for the establishment of a National Defense Executive Reserve, and Section 721 provides authorities to prohibit foreign takeovers of critical industries.

Proposed Changes to Title VII

Part C of S. 1379 would substantively amend Title VII by adding several new definitions (e.g., critical component, critical technology, domestic source, nondomestic source, industrial resources, and services). In addition, it would amend substantially the existing Section 708 and extend antitrust protection for "sanctioned industry consortia" in lieu of the "voluntary agreements" now specified in Section 708. It would repeal Section 708A and amend Sections 710 and 721. We agree with the repeal of Section 708A but have concerns about the amendments proposed for Sections 708, 710 and 721.

Existing Section 708

Section 708 now provides an antitrust defense for the actions of private persons who carry out "voluntary agreements." Voluntary agreements are agreements initiated by the President among private sector organizations for the purposes of planning preparedness programs and expanding the production and supply of materials essential to the national defense. A voluntary agreement that is to be exempt from the antitrust laws may be formed upon the President's finding that, "conditions exist which may pose a direct threat to the national defense or its preparedness programs." Formally promulgated rules must be followed, and an agreement may not become effective unless the Attorney General, in consultation with the Chairman of the Federal Trade Commission (FTC), finds that its purposes may not be achieved by an agreement having less anticompetitive effects, or without any agreement at all. There are many other requirements, including: Federal officials must be permitted to attend any meetings to carry out an agreement, transcripts must be kept of such sessions, notices must be published in the *Federal Register*, meetings must be open to the public unless certain exempt information is to be discussed, and agreements are limited to two years unless renewed for two year periods with the concurrence of the Attorney General. Finally, the Attorney General and the FTC are to monitor the operation of any agreements and report annually to Congress on the effects of such agreements on competition and market structure in the relevant industries.

Proposed Changes to Section 708

Section 125 of S. 1379 would expand significantly the types of activities that could be exempted from the antitrust laws under the DPA. Whereas voluntary agreements requested by the President to support DPA purposes can now be exempted, the proposed amendments offered by S. 1379 would, in addition, authorize antitrust exemptions for "sanctioned industry consortia." A sanctioned industry consortium is defined within S. 1379 as:

> "an arrangement among two or more entities for the purpose of jointly undertaking a specific program of basic research, research and development, production, marketing, any specified combination of the foregoing activities, or a flexible manufacturing network relating to industrial resources or critical technologies found to be essential to the preservation or enhancement of

> the industrial or technology base of the United States supporting the national defense. Such participating entities may include for-profit business concerns, not-for-profit entities, and educational institutions."

This new provision could extend antitrust waivers to virtually any joint venture, including marketing joint ventures, in high-tech or even basic industries. Though Presidential "authorization" (which would be delegable) would be required along with Justice Department and FTC review, no "direct threat" to the national defense would have to be cited in order for the new certification/antitrust exemption procedure to be available. Also, the proposed new "sanctioned industry consortia" authority is designed for situations where industry initiates a request for antitrust protection.

These provisions are fundamentally different from those now contained in the DPA. Therefore, we would recommend that any such new authority for "sanctioned industry consortia" be considered separately from existing DPA authorities. We do not believe it is appropriate to consider such broad authorities in the DPA context.

We urge enactment of the amendments contained in Section 8 of the Administration's bill. These amendments include:

- Authority for Section 708 voluntary agreement participants to develop "plans of action," such as employed under that Section during the Korean War and authorized under Section 252 of the Energy Policy and Conservation Act (EPCA), which provides an antitrust defense for U.S. oil companies carrying out the "Voluntary Agreement and Plan of Action to Implement International Energy Program." At present under Section 708, any actions decided upon by voluntary agreement participants would have to be reflected in a new "voluntary agreement," as distinguished from an implementing "plan of action." The inclusion of the plan of action concept in the DPA, as a component of voluntary agreements, provides more flexibility. While the plan of action must be approved, a separate approval process similar to the voluntary agreement is not required.

- Elimination of the unique, vague and difficult requirement that, in order for actions to qualify for the antitrust defense, the person taking them must have done so "in good faith." No such test was imposed in EPCA Section 252, on participants in the International Energy Program. In contrast with the DPA's good faith requirement, EPCA Section 252 provides that actions complained of must not have been taken "for the purposes of injuring competition."

- Provision for a breach of contract defense in Section 708 comparable to that now afforded by EPCA Section 252. It is expected that voluntary agreement participants would demand breach of contract protection as a condition of their assisting in carrying out Government policies with respect to reallocation of resources.

- Exemption of voluntary agreement participants from the provisions of laws, rules and regulations pertaining to advisory committees while they are carrying out the provisions of a voluntary agreement and/or plan of action under this Act.

- Availability of the option in the Administrative Procedures Act (5 U.S.C. 552(b)(4)) to deny public access to all meetings and records concerned with developing or carrying out voluntary agreements dealing with business confidentiality and trade secrets as well as national security. Currently, Section 708(d) of the Act limits denial of public access to meetings to develop voluntary agreements and records of all advisory committee meetings to reasons of national security. The proposed language removes impediments to eliciting a voluntary agreement from companies concerned about trade secrets, and improves the flexibility of Section 708 with respect to the application of advisory committee statutes.

Section 708A

Subsection (o) of Section 708A prohibits the use of voluntary agreements under Section 708 to implement any petroleum-related international agreement to which the United States is a party. Consequently, subsection 708A(o) does not allow antitrust protection for voluntary actions by United States oil companies to fulfill the United States' oil supply obligations under the North Atlantic Treaty, or other international agreements, such as the United States-Israel Oil Supply Agreement. Repeal of Section 708A would rectify this situation and would not affect the status of the EPCA as the exclusive statute governing voluntary agreements and plans of action pursuant to the International Energy Program. Again, we agree with the Committee's intention to repeal Section 708A.

Section 710

Section 710 of the DPA provides authority to the President to set up and train a reserve of persons from private industry (National Defense Executive Reserve) to fill Executive positions in times of national security emergency, and to employ persons without compensation. S. 1379 (Section 134) would amend Section 710. Among the amendments are provisions that would require members of the Executive Reserve to file unique public financial disclosures providing, in some cases, more information than those required of any other present full-time or part-time Government employee.

For example, under the present public financial disclosure requirements, there is a threshold amount that must be met before an individual has to report that he or she has an interest in any entity. There is no threshold amount in S. 1379; any financial interest will trigger the disclosure requirement. Further, no employee newly entering the Government has to disclose financial interest no longer held if that interest was not a source of at least $100 of income during a specified period prior to entry into Government service. This proposed requirement would require the disclosure of all assets held during the 60-day period prior to appointment, regardless of whether they are now held or whether they were the source of any income.

We believe that the present systems of public and confidential financial disclosure under the Ethics in Government Act are sufficient to meet the needs of the Government in maintaining a strong ethics program for these individuals. The addition of this new special system could inhibit the Government from attracting the best-qualified individuals to serve in the Executive Reserve.

Section 721

Section 127 of S. 1379 amends DPA Section 721, (Exon-Florio provisions) concerning investigations of mergers, acquisitions, and takeovers by or with foreign persons that could affect national security.

The Exon-Florio amendment establishes the standard that, in order to exercise his authority to suspend or prohibit any merger, acquisition, or takeover, the President must find "credible evidence" that the foreign interest exercising control might take action that threatens to impair national security. Section 127 of S. 1379 would weaken significantly this evidentiary standard by removing the requirement that the evidence be "credible." We are not aware of any instance in which the President has been unable to invoke this authority because of the evidentiary standard incorporated in the law.

We also are concerned about the replacement of the word "control," in subsection (d)(1) of Exon-Florio, with the word "completion" proposed in S. 1379. While the intent of this substitution is not fully evident, the effect of deleting the criterion of "control" is clear. As section 721(c) of Exon-Florio provides, its purpose is to give the President the authority to stop mergers, acquisitions and takeovers by foreign persons "so that such control will not threaten to impair the national security." "Control" is the central criterion by which Exon-Florio may be invoked because it is the potential control of U.S. companies by foreign persons that raises national security concerns. The completion of a merger, acquisition, or takeover by foreign persons, in and of itself, does not threaten to impair the national security. What might threaten the national security is the control that foreign persons could exercise over a United States company or industry.

Widening the scope of Exon-Florio in the manner suggested in S. 1379 would imply that the United States is concerned about foreign ownership per se, which would contradict our longstanding policy of welcoming foreign investment. In our view, the DPA as currently written correctly balances our open investment policy and U.S. national security concerns.

Additional Provisions of S. 1379

Parts B and C of Title II of S. 1379 provide additional provisions to improve industrial competitiveness and the defense industrial base by proposing changes to existing procurement policies and regulations. These efforts are similar in purpose to several existing OFPP initiatives. For example, OFPP is currently working to: a) simplify the procurement process by reducing the number of regulations and the corresponding paperwork; b) emphasize the purchase of commercial products and authorize the use of commercial procurement practices, and c) make it easier for contractors to retain technical data rights. These efforts, as do the changes proposed in Parts B and C, recognize the relationship between good procurement practices and a healthy, competitive industrial base. Sections 211, 212, 213, 214, and 221 of S. 1379 assign specific tasks to the Administrator for Federal Procurement Policy. Comments and views on those tasks are provided below.

Section 211

Section 211 provides that the President, acting through the Administrator, prescribe a policy that encourages contractors to invest in advanced manufacturing technology, equipment and processes. The policy is to provide for increased profits for contractors that make such investments by assigning increased weight to source selection criteria relating to the efficiency of production.

Provisions are now included in the Federal Acquisition Regulation (FAR) Part 15.905-1(d) and DOD FAR Supplement (DFARS) 215.970.1(c) that provide for the consideration of contractor capital investments in developing profit objectives. Those FAR and DFAR provisions appear to already implement the authorities proposed in subsection (1) of Section 211. Subsection (2) of Section 211, would require assignment of increased weight to source selection criteria relating to the efficiency of production. This weighting would benefit all offerors, including foreign offerors. To apply this provision to just domestic concerns would be anticompetitive and could harm the defense industrial base. Accordingly, if Subsection (2) is retained it should not be limited to domestic firms.

Section 212

Section 212(a) requires the President, through the Administrator for Federal Procurement Policy, to establish an acquisition policy which would require, to the maximum extent practicable, that the acquisition plan for any major system acquisition provide for specific contract solicitation provisions which encourage competing offerors to use modern industrial facilities, production systems and equipment that increase the productivity of the offerors and reduce the costs of production. An acquisition policy similar in intent to that prescribed in Section 212(a) is now provided in DOD Directive 5000.44, "Industrial Modernization Incentives Program" (IMIP). The specific inducements suggested in Section 212(b) will be reviewed to determine if they should be incorporated in DOD Directive 5000.44 and whether a policy similar to the IMIP provided in 5000.44 should be made applicable to civilian agencies.

Section 213

Section 213 states that the President, acting through the Administrator for Federal Procurement Policy, "shall prescribe an acquisition policy authorizing a departmental secretary to restrict to domestic sources competition for all or a portion of a contract opportunity to fulfill the requirement for supplies that are the products of, or are manufactured through, the application of a critical technology...."

The Competition in Contracting Act of 1984 (P.L. 98-369, July 18, 1984) now provides authority to use other than full and open competition when it is necessary to award a sole source contract in order to maintain the industrial base. This authority is implemented in Section 6.302-3 of the FAR and further authorities are not considered necessary for this purpose.

Section 214

Section 214 consists of 3 subsections: Subsection 214(a), Maintaining Domestic Sources; Subsection 214(b) Subcontracting, and Subsection 214(c) Critical Items of Supply.

Subsection 214(a). Subsection 214(a) requires the President, acting through OFPP, to prescribe an acquisition policy authorizing a departmental secretary to make a noncompetitive contract award for the procurement of any critical item of supply from a domestic source determined to be essential to national security. This proposed policy has already been implemented in FAR 6.302-3 and further authority is not required.

Subsection 214(b). Subsection 214(b) provides that the President, acting through the Administrator for Federal Procurement Policy, shall prescribe a policy requiring that the solicitation for the procurement of any major system (1) specify the minimum percentage of the total estimated value of the contract that is to be performed by one or more domestic firms; (2) require the submission of a subcontracting plan to attain the percentage specified; (3) specify that a source selection factor not to exceed 10% of the total evaluation points relate to the domestic percentage requirement and the extent to which each offer meets or exceeds the specified percentage; (4) provide that the percentage specified by an offeror shall be a material element of any resulting contract; and, (5) require the contractor to identify each subcontractor counted towards attainment of the specified percentage.

The requirements of this subsection are not considered necessary since the Buy American Act now provides for a 50 percent price evaluation preference for domestic products for the Department of Defense. This evaluation differential is also applied to domestic products if 50 percent or more of the components are foreign.

In addition, agreements have been entered into to waive the Buy American Act in return for other countries removing any similar barriers. Also, under the Trade Agreements Act of 1979 (19 U.S.C. 2501), waivers of the Buy American Act are granted for purchases from sources in countries that have signed "The Agreement on Government Procurement," negotiated under the auspices of the General Agreement on Tariffs and Trade. The requirement of this subsection to give a preference at the time of source selection to offerors that propose a higher domestic content percentage would be contrary to these agreements.

Subsection 214(a). Subsection 214(c) requires the President acting through the Secretary of Defense to identify and publish a list of critical items in the FAR. Part 208 of the Defense Federal Acquisition Regulation (DFAR) now provides such a list. Items on the list include:

- Miniature and instrument ball bearings.
- Precision components for mechanical time devices.
- High-purity silicon (HPS).
- High-carbon ferrochrome (HCF).
- Forgings and welded shipboard anchor chain items.
- Antifriction bearings

Defense requirements for these restricted items, including products containing the items, must be acquired from domestic manufacturing sources. Consideration will be given to including this listing in the FAR.

Section 221

Section 221 of S. 1379 provides that the Administrator for Federal Procurement Policy shall establish a policy that would require the application of price evaluation factors to the offers of nondomestic sources when necessary to counter any price advantage the nondomestic source may have over a domestic source as a result of any "unfair advantage." "Unfair advantage" as used within the Section means,

> "(1) direct or indirect subsidization of a nondomestic source by a foreign government or other foreign entity or (2) exemption of a nondomestic source from the application of a statute, regulation, or executive order of the United States relating to environmental protection, fair labor standards, or subcontracting participation by small

> business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals and members of other designated groups, applicable to domestic sources."

A 1986 DOD study mandated by Congress concluded that foreign firms do not enjoy an unfair competitive advantage from the non-application of U.S. socio-economic programs because many countries impose similar requirements. In addition, substantial difficulties would be encountered in fairly implementing the policy proposed by this Section. The costs of complying with the various socio-economic requirements imposed by the U.S. or foreign governments have not been quantified and would be extremely difficult to estimate.

Section 222

Section 222 provides that a contractor that has engaged in an unfair trade practice as defined in the Section, be subject to suspension and debarment. The definition of "unfair trade practice" provided in Section 222 is largely considered to be within the scope of current regulations (FAR subpart 9.4). Two of the three factors included in the definition; i.e., violation of an export control law and false certifications are now covered. The only factor not specifically covered is an unfair trade practice as determined by the International Trade Commission (ITC). ITC rulings on unfair practices are not (as we understand) necessarily based on fraudulent or criminal intent. Accordingly, I do not believe we would want to automatically suspend or debar a contractor on the basis of these rulings.

Conclusion

Mr. Chairman, in conclusion, we support your efforts to reauthorize the DPA. We particularly support the provisions in S. 1379 that would increase the statutory threshold from $25 million to $50 million for guarantees under Section 301 and loans under Section 302. We also agree with raising the purchase guarantee authority under Section 303 from $25 million to $50 million. We wholeheartedly support the proposed repeal of Section 708A of the DPA. The repeal of Section 708A will provide an antitrust defense for companies fulfilling oil supply obligations under U.S. international agreements. Also, we support the addition of "Services" to Section 101. We are, however, concerned about the proposed DPA fund established by Section 113; the offset reporting requirements proposed by Section 114; the antitrust protection for "sanctioned industry consortia" proposed by Section 125, and the changes to the "Exon-Florio" provisions proposed by Section 127. As a final point, we believe the authorities granted by the DPA should be extended on a permanent basis. S. 1379 proposes to extend the DPA only through September 30, 1993. The DPA has been amended 50 times since its enactment. A permanent extension would eliminate the need for so many periodic reauthorizations and would avoid potential lapses in future uses of the authority conveyed by the DPA. Of course, funding for projects authorized under Title III of the Act would be subject to annual appropriations reviews and approvals.

In summary, Mr. Chairman, we appreciate the efforts of your Committee. My answers to the specific questions contained in your February 22, 1990 invitation letter are provided in Attachment 1 hereto. As indicated, we would welcome the opportunity to continue to work with you to achieve the reauthorization of this necessary and important statute. Thank you. I will be glad to answer any questions.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

OFFICE OF FEDERAL
PROCUREMENT POLICY

Attachment 1

Responses of Allan Burman, Administrator Designate for Federal Procurement Policy to the Four Questions Contained in the February 22, 1990 Letter From Senators Riegle and Dixon

Question 1: Do you believe that current systems for gathering and assessing data on the extent of foreign dependencies among prime contractors and subcontractors of defense materials are adequate? What changes in our current assessment policies and practices would you recommend, if any?

Answer: The adequacy of existing systems for assessing foreign dependencies is hard to determine. There is no single Government-wide (or even DOD-wide) system for gathering data that routinely and systematically reflects the extent that defense contractors, both prime contractors and subcontractors, are dependent on materials provided by foreign sources. The Federal Procurement Data System, as well as the DOD Procurement Data System, identify contracting actions over $25,000 awarded to foreign companies. The data systems do not, however, include data to identify the source of all the materials and components incorporated into the items procured, which materials and components are critical to the national defense, or whether alternative sources or substitutes are available.

Over the years, DOD has compiled a fairly good record in developing contingency plans and obtaining needed materials. Accordingly, the existing processes for identifying sources of needed materials, while often informal, seem to work. These processes depend in part on information provided voluntarily by contractors to program offices. The contractor provided information is used, together with other data, by the Services and the Industrial Base Office to assess vulnerabilities and to determine the eligibility of projects for funding under Title III of the DPA. Like all systems, however, I am sure that the present procedures could be improved.

Such improvements may be necessary to comply with the FY 1990 DOD Authorization Act, which requires the consideration of industrial base issues in the preparation of three specific reports on critical defense technologies:

- Section 601 of the Act establishes a National Critical Technology Panel. The panel is headed by the Director of the Office of Science and Technology Policy. The panel is charged with submitting to the President a biennial report on national critical technologies. Each report shall identify product and process technologies that the panel considers to be national critical technologies and provide the panel's rationale. The number of such technologies identified in any report may not exceed 30. The report shall be submitted not later than October 1 of even-numbered years.

- Section 605 of the Act requires the Secretary of Defense to submit to the Committees on Armed Services of the Senate and House an annual plan for developing the technologies considered by the Secretary of Defense and the Secretary of Energy to be technologies most critical to ensuring the long-term qualitative superiority of the United States' weapon systems. The reasons for the selection of each technology will be stated in the plan. The number of such technologies identified in any plan may not exceed 20. Each plan shall be developed in consultation with the Secretary of Energy. Each plan shall be submitted not later than March 15 of each year. The 1990 plan will be the second such plan.

- Section 842 of the Act requires the Secretary of Defense, acting through the Undersecretary of Defense for Acquisition, to submit to the Committees on Armed Services of the Senate and House a report on the actions taken under Section 2503 of Title 10 (the industrial base section) for the improvement of the industrial base of the United States. This report shall include the Undersecretary's analysis of the condition of the defense industrial base of the United States particularly with respect to the financial ability of United States businesses to conduct research and development activities relating to critical defense technologies. The first report under this section shall be submitted not later than March 15, 1990.

I defer to DOD regarding any improvement they will need to ke to their existing systems in order to collect data for these reports.

Question 2: Do you have concerns that foreign companies might become the sole source of certain equipment or technologies vital to our national security?

Answer: We have concerns anytime a specific company, whether controlled by foreign or U.S. interests, becomes the sole source of certain equipment or technologies. The cornerstone of our economy as well as our procurement system is based on marketplace competition.

Through competition, the Government obtains the option to choose the most advantageous goods and services that society and private industry can produce. The competitive process enables and encourages the Government to shop around, find, tailor, and select the best solution for its needs. The competitive market spurs potential contractors to create improved ideas, designs and technologies from which the Government may draw. Competition also provides the Government a means to pay the lowest, fair and reasonable price while the contractor receives payment and reasonable profit for the work done. Stated another way, the existence of several competitive offers enhances design while simultaneously driving down cost. In non-competitive (sole source) situations, we lose these advantages.

In the last several years much new legislation has been enacted that is aimed at enhancing competition. The Competition in Contracting Act of 1984 (CICA) is the premier statute in this area. CICA specifically links procurement policies with industrial base concerns by providing specific authority to agencies to exclude sources from competing for contracts if such action is necessary to establish or maintain alternative source(s) and where the exclusion:

> "... would be in the interest of national defense in having a facility (or a producer, manufacturer, or other supplier) available for furnishing the property or service in case of a national emergency or industrial mobilization; or
>
> ... would be in the interest of national defense in establishing or maintaining an essential engineering, research, or development capability to be provided by an educational or other nonprofit institution or a federally funded research and development center."

CICA also permits the awarding of contracts on a sole source basis where:

> "It is necessary to award the contract to a particular source or sources in order (A) to maintain a facility, producer, manufacturer, or other supplier available for furnishing property or services in case of a national emergency or to achieve industrial mobilization, or (B) to establish or maintain an essential engineering, research, or development capability to be provided by an educational or other nonprofit institution or a federally funded research and development center."

These authorities provided by CICA are some of our best tools for addressing sole source dependencies.

Question 3: Do you believe the Federal Government should make greater efforts to foster the development of domestic-based defense-related technologies either directly through funding programs, or indirectly through encouraging joint industry cooperation or compulsory licensing of foreign technologies?

Answer: The Department of Defense and other major departments and agencies, as large consumers of products and services, foster the development of domestic-based defense-related technologies by buying large amounts of high technology products and services, and by directly funding billions of dollars in research and development each year. The research and developoment funding goes to projects solicited by the department as well as those proposed by contractors submitting unsolicited proposals and those selected by contractors for their defense-funded independent research and development programs.

Beyond the acquisition of products and services and direct funding of research and development, I believe that the primary role of the Federal Government in fostering domestic industry should focus on removing any unwarranted Government barriers to joint ventures and on making appropriate tax law changes to aid capital formation. This is true not only for defense-related technologies, but also for non-defense industries that are globally competitive. Non-defense industries contribute indirectly to our defense by adding to our economic strength. In addition, research and development in these industries may lead to new technologies with defense applications, and DOD increasingly relies on commercially developed products to meet defense needs.

Government funding of projects where the Government itself is not a consumer and does not need the product, not only can be wasteful but can be counterproductive by inhibiting private investment. It is the marginal, and sometimes questionable, projects that seek Government funding because they cannot raise capital in the private sector.

Question 4: Do you believe that current mechanisms to facilitate the transfer of high technology defense research into benefiting civilian related technologies are adequate? What policy changes, if any, would you recommend?

Answer: In the last few years, Congress and the Administration have established a number of new policies to foster the transfer of federally-supported research into commercial products and processes. The Stevenson-Wydler Technology Innovation Act of 1980, the Federal Technology Transfer Act of 1986, Presidential Executive Order 12591 titled "Facilitating Access to Science and Technology", and provisions in the FY 1990 Defense Authorization Act provide authorities to all agencies, including the Departments of Defense and Energy, to make commercialization of federally-supported technologies more effective. These policies affect research done in universities, Government labs, and in corporate labs under Government contract. All of these policies can work to increase the return America earns in its research dollars and improve the global competitiveness of our industries.

These policies have varying degrees of implementation. We are seeing some success with the patenting and licensing of technologies developed in Government labs. By allowing Government inventors and their labs to share in the royalties such patents earn, Congress has created an incentive to move that technology out of the lab. Through the creation of Cooperative Research and Development Agreements, we are also able to combine the market knowledge of industry with the facilities and research capabilities of Government labs. Universities are taking similar steps to improve the application of federally-supported research that they perform.

However, there is room for improving the opportunities for private sector investment in technologies developed by contractors fulfilling Government contracts. Under the Defense Authorization Act of 1988 and Executive Order 12591 the Department of Defense has amended its technical data rights rules in the right direction, and we are working with them to develop rules that can be incorporated into the Federal Acquisition Regulation for use by all Federal agencies. These rules will be based on the principle that the Government should buy only the data rights it needs and leave the proprietary rights to commercialization with the developer. The Government would retain sufficient rights to assure subsequent procurements would be competitive.

OFPP is working to ensure that the regulation finally issued by the agencies will facilitate the negotiation of contractor rights in technical data developed in the performance of Government contracts. The opportunity to secure proprietary rights will affect the types of firms attracted to Government contract solicitations as well as the firms' willingness to invest their own funds in technology with dual use in the Government and commercial sectors. Firms that see an opportunity for commercial sales will be more willing to share in the costs of developing that technology. This is as it should be: The economy benefits from the commercialization of the technology, and the taxpayer benefits by paying a lower price for Government requirements.

Senator DIXON. Thank you very much, Mr. Burman.

It's been suggested that we invite Mr. Richards of the Commerce Department to join the panel. Is he here? It may be that he would want to participate in the Q and A. I thank you, Mr. Richards. We're delighted to have you here.

I recognize the distinguished senator from Missouri, Senator Bond.

Senator BOND. Thank you very much, Mr. Chairman.

I want to welcome Mr. Burman and Mr. Babbin. It's with mixed feelings that we welcome Jed Babbin here because I hope that this won't mean that he will no longer be able to participate in the Garn Ski Cup. I would miss the competitive edge which his participation affords me in that contest, but I know that the children's prime health loss would be the department's gain.

Senator DIXON. The Vice President was the champ out there.

Senator BOND. I'm not talking about champs. I'm not talking about Heinz and Lautenberg and Kerry. I'm talking about Babbin and Bond. It's a different order of magnitude.

Mr. BABBIN. It may be several orders of magnitude, Senator. [Laughter.]

Senator BOND. Well, we won't go into that, but I would say that we regularly are passed by the snowcats coming down the mountain at slow idle.

I'd like to ask Jed, referring to the proposed measure before us, talking about stockpiling of critical components, and there's an addition proposed that would affect stockpiling of components of major weapon systems, equipment, essential production, repair, maintenance or operation of such systems or equipment.

One of the things that we discussed yesterday in a different but related hearing brought out the rapid change in technology and is there a problem of obsolescence if you're stockpiling today's chips when you may not be called upon to use them for several years?

How would you handle the problem of obsolescency in that kind of stockpiling?

Mr. BABBIN. Senator, your point is very well taken. There are concerns, as there always will be, about keeping the materials which are on hand applicable to the systems that are in the field. I think that the systems that are in place now for managing that type of rolling stockpile, if you will, are pretty well trying to take care of that. That's one of the things that we are always concerned about in dealing with our various inventories and our war reserves.

Further stockpiles I don't think would really change that a great deal. Whether or not we stockpile to a certain level, we are still always going to have to manage that very well. You are exactly right and I believe that's being done right now.

Senator BOND. Previously I asked Mr. Murrin about some of the concerns with the antitrust waiver provisions.

Dr. Burman, I guess in his written testimony, has expressed opposition to the waiver provisions being included in the context of the DPA.

Do you oppose that authority in a different vehicle? What are your views on it? I would be interested to hear what the other witnesses think.

Mr. BURMAN. This has been an issue, as you know, of considerable importance to the administration. The President just yesterday in talking to the American Electronics Association did suggest that we would be looking at some improvements with regard to joint production ventures at the manufacturing level.

As you know, with the National Cooperative Research Act of 1984, there are already provisions with regard to R&D. These would be done on a case-by-case basis and clearly you would be looking at the anticompetitive and the competitive effects of what those ventures would be. There would not be complete immunity from the antitrust provisions, at least in my understanding.

Also, if someone were to disclose to the Government the venture, then we would be looking at actual damages as opposed to what's currently treble damages in that situation. So those are the type of things that the administration is considering and we would certainly be looking to work with the Congress for appropriate legislation to do that.

Senator BOND. Any further thoughts on that?

Mr. BABBIN. I think Dr. Burman has summarized that very well.

Senator BOND. Gentlemen, I ask all three or any of you to comment on the offset reporting requirements. Do you see in the proposed legislation any problems with the $5 million reporting threshold or other restrictive components of it?

Mr. BURMAN. We have raised concerns in our testimony with regard to the $5 million requirement. Mainly, we would have a shift then in focus. The current approach has been to collect information from industry and then to provide a report.

I believe the level of information with regard to offsets in the latest report is offsets of $500,000 or higher. So we are certainly providing information with regard to offsets, but we are not doing that on a real time basis nor doing it every time a company arranges an offset. I think that would be the distinction.

We have also suggested that since we are reporting on our ability to negotiate with our foreign trading partners to reducing offsets, we would hope that would satisfy the Congress' need for information with regard to offsets.

Mr. BABBIN. We agree with that, Senator. We would not support the reporting provisions in the bill at this point.

Mr. RICHARDS. We also agree that establishing a duplicative database on offsets would not give us any substantial information. Reporting offsets that would be part of an agreement today that may not be identified or carried out for 5 or 10 years does not provide the type of information that you would want to establish policy or really measure the effects on the industrial base.

We strongly believe that the initiative to establish a policy and hold consultations with our trading partners is the most important step because it's generally agreed within the administration that offsets basically are inefficient and not productive.

Senator BOND. I asked a question earlier about the real nature of the threat to our defense industrial base and the proposed means of dealing with it. I would give you my view that perhaps the defense industrial base has shrunk because most firms do not want the hassle that comes with doing business with the Pentagon. If you disagree, I would appreciate hearing that. If you agree, I would ask you whether it would not make sense to take steps to make the Defense Department a more positive influence rather than a negative one, perhaps by eliminating unnecessary regulations, specifications, controls on profits, buying more commercial products that could be sold to other customers.

I'd appreciate the comments of all of you on that.

Mr. BABBIN. Senator, you are exactly right and one of the principal focuses of Mr. Cheney's defense management review is to do exactly that. We are trying to make DOD a better and more sensible customer by getting rid of a lot of the nonvalue-added procedures which frankly we've imposed on ourselves over the years.

In the defense business we have probably as many rules and regulations governing the business as any other segment of industry anywhere and I think much of that is of our own making. Micromanagement is one of those problems that people like to blame on the hill. Let me tell you, I think we're looking at it from our own side, too. It's not just a term one uses in the third person. It's our micromanagement as well as everyone else's. We are trying to do away with a lot of these rules. We're trying to do away with a lot of the unnecessary nonvalue-added procedures and make it a more attractive market.

We want DOD to be a more sensible customer and not have this adversarial relationship as it has had with the industry over the past few years.

Senator BOND. Would Commerce care to take a lick at the Defense Department on that one?

Mr. RICHARDS. No, I don't believe so, Senator.

Senator BOND. Thank you, Mr. Chairman.

Senator DIXON. I thank the Senator from Missouri.

The senior Senator from Pennsylvania, Senator Heinz.

Senator HEINZ. Mr. Chairman, thank you.

Regarding the critical technologies plan which was submitted March 15, 1989, updated May 5, 1989, you identified 22 critical technologies. Are you familiar with the Japanese equivalent of that?

Mr. BABBIN. I'm really not, Senator.

Senator HEINZ. It's a remarkable document, published in English by the Japanese. It's entitled "Future Technology in Japan." It looks at 17 broad fields of technology, 1,071 subsets within the 17, and of that number the plan identified 33 fields of high importance for deserving government support. Most importantly, it has criteria by which it goes through all of these fields and then comes to a very specific conclusion about the necessity of government support for the country to be competitive.

But you're not familiar with that?

Mr. BABBIN. Not right at the moment, Senator. I don't recall seeing the document.

Senator HEINZ. May I direct your attention to it?

Mr. BABBIN. Yes, sir.

Senator HEINZ. It's probably a good idea for you to know what the Japanese plan to do to you and me and the rest of the country.

Let me ask Mr. Burman a point in his testimony regarding section 214(b) of S. 1379 which relates to domestic subcontractor procurement.

That provision is, by the way, very similar, Mr. Chairman, to legislation I introduced last year in S. 495.

I've got to say to Mr. Burman, I have to confess, I don't understand your objections. Let me tell you why I don't understand them.

You indicate that the Buy America Act already covers these situations, but my understanding is that the price preferences in the act, which is the relevant element, are either not applied because of existing MOU's with our allies or when they are applied cover just the prime contractor, not the subs.

Are you saying something else?

Mr. BURMAN. I need to look at the specific provision, but the Buy American Act looks at domestic content with regard to products that are being purchased and componentry, and if over 50 percent of that componentry is domestic, then that falls within the purview of an American product. So there clearly is a componentry test.

Senator HEINZ. You're not saying that the prime contractor has to apply a Buy America test?

Mr. BURMAN. The American Government, in looking at who it's purchasing the product from, will make a determination as to whether or not this is an American product.

Senator HEINZ. You also mentioned that these situations are covered by the GATT procurement code. What do you mean by that?

Mr. BURMAN. There are a whole host of items where there are nondiscriminatory trade arrangements under the General Agreement on Tariffs and Trade. I believe it's something above $170,000 for those items that have no Buy America Act requirements associated with them. Those have been waived for those kinds of purchases.

Senator HEINZ. But how many of them are relevant here?

Mr. BURMAN. It could be a substantial number. I don't know off the top of my head.

Senator HEINZ. It's my understanding, as you know, the code applies only to agencies that each government has listed with code authorities and a very, very substantial part of DOD procurement simply isn't listed and there are no code obligations there. You agree there are no code obligations where it's not listed?

Mr. BURMAN. Certainly.

Senator HEINZ. But you don't know what proportion isn't listed?

Mr. BURMAN. I could certainly find out that information for you.

Senator HEINZ. The reason I ask that is you are making an assertion in opposition to something Senator Dixon and I think is important and you're giving reasons. This is one of the reasons you give, but you're not able to substantiate it in a meaningful way.

Mr. BURMAN. But the other concern one has with this type of approach is that our putting restrictions on domestic content with regard to subcontractors, in my view, would lead to our trading partners performing exactly the same kinds of functions.

Senator HEINZ. That's all well and good, but what I'm saying to you is, if you're going to make an argument before the Congress, you'd better back it up.

Now in two cases I don't find your argument is very well backed up. Are you saying, just so I understand you, that if the amendment only applied to those areas that were not listed, the noncode situations, you would have no further objections to it?

Mr. **Burman**. No, I would still have objections with regard to putting burdens on prime contractors to ensure that they could only use domestic items unless we were using an exception on the basis of the Competition in Contracting Act to determine that we needed that area for some critical industrial mobilization purpose.

Senator **Heinz**. Do you favor having such a requirement triggered only if it applies to one of the critical technology areas listed?

Mr. **Burman**. As I stated, the Competition in Contracting Act does provide exceptions for industrial mobilization base purposes and we have spent over $9.5 billion on those kinds of areas. So it seems to me that there are opportunities for making those judgments aside from critical technologies.

Senator **Heinz**. I'm asking you a policy question. Does the administration support or will it accept these Buy America provisions if they are only applied to (a) noncode areas or (b) are applied as a matter of specific practice, law, to the 22 critical technologies that have been identified by DOD? Yes or no?

Mr. **Burman**. I believe that the administration has the option for making those determinations today.

Senator **Heinz**. But we're saying, look, we're trying to write a law.

Mr. **Burman**. I don't know that that would be necessary if we could already make those determinations.

Senator **Heinz**. But you wouldn't oppose our mandating that?

Mr. **Burman**. I would have to look at the specifics of the provision.

Senator **Heinz**. Thank you.

Thank you, Mr. Chairman.

Senator **Shelby**. Thank you, Senator Heinz.

Deputy Secretary of Commerce Murrin, who testified earlier today, said:

> Our national security is founded on the strength of our industrial and technology base. Government has a responsibility to ensure that technological infrastructure needed to support industries is in place. This includes R&D support for precompetitive basic research and technologies of broad relevance to U.S. industry. This includes also dual-use technologies.

Do you agree with Mr. Murrin's testimony in this regard or does that get the Government involved in picking winners and losers?

Mr. **Babbin**. Senator, I certainly agree in general with what Mr. Murrin said.

Senator **Shelby**. How do you get away from the notion of picking losers and winners or winners and losers?

Mr. **Babbin**. I don't know that we are going to be in the business of doing that. I don't think we should be.

Senator **Shelby**. When you choose, aren't you picking winners and losers? Maybe you have to. I don't know.

Mr. **Babbin**. I don't think you necessarily are, Senator. Let me give you an example of how I think we're getting there without picking winners and losers.

One of the things we're doing in the Department right now is developing a technology strategy and supporting plan which is going to serve as a road map to identify critical technologies, funding priorities, organizational assignments and technology flow from research facilities through weapon systems production. This is a very comprehensive plan that's being put together under the direction of my boss. Mr. Atwood has committed his time and attention to that as well.

We expect this plan to be finished in the next month or so and, frankly, we would like to come up and talk to you about it when it's done.

Senator SHELBY. Mr. Burman, do you have any comment?

Mr. BURMAN. Right now, the Defense Advanced Research Project Agency, which gets about a billion dollars in funding a year, looks at these kinds of enabling technologies. They do them for the Defense Department mission, but clearly the Defense Department mission encompasses all kinds of areas, particularly the electronics field. So I think we could say that the Government is already doing that to a considerable extent in the Defense Department.

Senator SHELBY. Mr. Richards.

Mr. RICHARDS. I don't believe Mr. Murrin was suggesting that we pick winners and losers, but more suggesting that——

Senator SHELBY. What's the result, though? Isn't that the result?

Mr. RICHARDS. I think what he was suggesting was that we help more sectors become winners.

Senator SHELBY. OK. A February 28 this year article in the New York Times entitled "Electronics Ventures Expected" reported that several electronics companies are discussing the formation of a new joint venture to develop and produce display screens for use in laptop computers, military gear and television sets.

The article also noted that the Defense Department had voiced concerns about being dependent on foreign suppliers for computer display screens and has expressed interest in a broad government-industry effort to reduce that dependence.

Is the substance of that article correct, if you're familiar with it, and if DOD wanted to reduce foreign dependencies of certain key technologies, do you believe it would be appropriate to use authorities under title III to develop U.S. suppliers?

Mr. BABBIN. Yes, sir, in general I agree with that. I believe that is correct. And, yes, that's exactly what we're doing. That's what we do with title III and I forget the precise number—11-some-odd projects under title III going on right now.

Senator SHELBY. How dependent are we on foreign sources? Pretty much so in certain areas, aren't we?

Mr. BABBIN. In certain areas, yes, sir, but I think we've got to distinguish between foreign dependency and foreign sourcing and foreign vulnerability. We can have foreign sourcing in a lot of cases which may fall into play——

Senator SHELBY. But maybe not vulnerability?

Mr. BABBIN. Yes, sir. There's a difference. We can be buying something foreign without having a vulnerability if there might be an alternate domestic supplier that, for one reason or another—price or something—just is not as competitive as the foreign one. But in time of war or national emergency, we might still be able to go to that domestic supplier.

Senator **Shelby**. The so-called Exon-Florio provision that you're familiar with in title VII of DPA permits the President to block a takeover of an American company by foreigners if such takeover would threaten the national security.

He's used that authority only once that I know of. There may have been others.

Concerns have been expressed that many of our second and third tier defense companies have now been taken over by foreign firms. They maybe don't hit the headlines. Do you have any way of knowing which domestic defense firms are now owned by foreign interests? If not, should we have such a system in place? If you don't know offhand, could you furnish that to the committee for the record?

Mr. **Babbin**. I don't know offhand, Senator. I would be glad to furnish that for the record. But my impression is we do have some visibility into that problem.

[The material referred to follows:]

INSERT FOR THE RECORD

☐	HOUSE	APPROPRIATIONS COMMITTEE	☐	HOUSE	ARMED SERVICES COMMITTEE	☐	HOUSE	OTHER Banking, Housing and Urban Affairs Com.
☐	SENATE		☐	SENATE		X	SENATE	
HEARING DATE March 8, 1990		TRANSCRIPT PAGE NO. 70		LINE NO. 17		INSERT NO.		

WAYS OF KNOWING DOMESTIC DEFENSE FIRMS OWNED BY FOREIGN INTERESTS

Senator Shelby: Do you have any way of knowing which domestic defense firms are now owned by foreign interests? If not, should we have such a system in place? If you don't know offhand, could you furnish that to the committee for the record?

Answer: We have several ways of knowing those firms that are owned by foreign interests. Information on the association or "family tree" of those firms doing business with DoD is available via the Defense Industrial Network (DINET) system in the Contractor and Government Entity File (CAGE). Similar data is available from the DD-350 files (current DoD acquisitions over $25,000). A historical analysis of foreign acquisitions of U.S. firms is provided in the Commerce Department data file entitled "Foreign Direct Investment in the United States."

The Exon-Florio Amendment to the Defense Production Act gives the President authority to stop a foreign interest from merging with or acquiring a U.S. firm when national security is affected. The DoD participates in the Exon-Florio review process and, therefore, is aware of U.S. defense contractors acquired by a foreign interest when documentation pursuant to the Exon-Florio amendment is submitted to the Treasury Department.

Senator **Shelby**. Mr. Burman, do you have any comment?

Mr. **Burman**. No. I understand that again the Defense Advanced Research Project Agency has been doing a study along those lines and something will be published shortly on that.

Senator **Shelby**. Mr. Richards.

Mr. **Richards**. I believe there is a database being developed on all the firms that are being acquired and subject to the Exon-Florio provision.

Senator **Shelby**. Even the first, second and third tier or maybe even lower?

Mr. **Richards**. Yes. And by just maintaining the record of the cases that are reviewed by the Committee on Foreign Investment in the United States, the Department of Defense would have access to that full base as to the growth in the number of defense contractors and subcontractors under foreign ownership.

Senator **Shelby**. Gentlemen, we appreciate you being here today and we'll look forward to getting that other information we requested for the record.

The hearing is adjourned.

[Whereupon, at 11:35 a.m., the hearing was adjourned.]

LEGISLATIVE PROPOSALS TO REAUTHORIZE THE DEFENSE PRODUCTION ACT OF 1950

THURSDAY, MARCH 22, 1990

U.S. Senate,
Committee on Banking, Housing, and Urban Affairs,
Washington, DC.

The committee met at 10 a.m., in room SD–538, Dirksen Senate Office Building, Senator Riegle (chairman of the committee) presiding.

Present: Senators Riegle, Dixon, Shelby, Heinz, D'Amato, Bond, and Pressler.

OPENING STATEMENT OF CHAIRMAN RIEGLE

The Chairman. The committee will come to order.

Let me welcome all those in attendance today. We especially appreciate the attendance of our very distinguished witnesses.

Last year, 1989, the Banking Committee devoted a very substantial amount of time to the savings and loan reform package. That package was enacted and is now law. That legislation attracted most of the attention of the committee. At the same time, we were doing a number of other things, one of the most important of those was to really move into the question of the Defense Production Act and the changes that would seem to make sense in that area.

Last year, we held five hearings to examine concerns expressed by many strategically placed American citizens about the state of our country's industrial, technological and financial base.

I might say that the views expressed at those hearings were not encouraging to hear. We heard from industrial and financial leaders such as John Reed, the Chairman of Citicorp, the largest bank in the country; Robert Galvin, the CEO of the Motorola Company; and many others—a wide variety of people well known nationally and certainly to our witnesses this morning.

Their testimony in total indicated that current economic trends, if not reversed, will result in a substantial reduction in our country's future influence in world affairs.

Many other witnesses have noted that our country lacks coherent governmental policies aimed at fostering the success of American firms in what can only be called a fiercely competitive global economy.

After these general oversight hearings, we began in November and have continued this year hearings on specific legislative proposals as to how best to amend the Defense Production Act. Senator Dixon's bill, S. 1379, has been a focus of these hearings.

Today, we are conducting the fourth and final hearing in this series. During these hearings we have received very helpful testimony advocating amendments to the DPA to help arrest the decline of our defense, industrial and technology base.

The committee is now ready to move into a process of sorting through these various suggestions, including those that are made in S. 2168, a bill introduced by the ranking minority member, Senator Garn.

From this, we will formulate proposed amendments to the DPA to be considered at a committee markup in May. Any amendments this committee will make to the DPA are not going to, by themselves, reverse our industrial decline. Such a reversal will require a far broader national program. This committee will, however, continue to hold hearings to help us develop the constituent elements of a broader national strategy for U.S. competitiveness. However, amendments we will make to the DPA can, and will make an important contribution to building the broader program that is clearly needed.

I might say to the interest of our witnesses and others that the majority leader, Senator Mitchell, has just organized a task force among Democrats which includes a number of the key committee chairmen in the Senate—Chairman Bentsen of the Finance Committee; Chairman Nunn of the Armed Services Committee; Chairman Hollings of the Commerce Committee; and other members who have a keen interest and special background in the area of U.S. competitiveness. I have been asked to chair that group and Senator Shelby is serving on that task force as well.

Our mission will be to develop an encompassing strategy for how we really drive U.S. productivity forward, viewing that as the bottom line to a host of other things, and also take this conversion issue into account as we shift away from this cold war economy and make major changes that are part of a strategy that really enables the United States to make an economic surge.

Senator Shelby and I met and talked about this yesterday, but we will be moving on that in a separate forum in the weeks just ahead.

We have a particularly talented group of witnesses with us today and I appreciate them taking time to be with us. We have Mr. William Paul, who is the Executive Vice President of United Technologies Corporation, also representing the Aerospace Industries Association. We have Mr. James Koontz, who is the President and Chief Executive Officer of the Kingsbury Machine Tool Corporation of New Hampshire, also representing the National Center for Manufacturing Sciences. We have Mr. David Dudon, who is the President of Mutual Tool & Die in Dayton, Ohio, representing the National Tooling & Machining Association. We have Dr. Alan Shaw, who is the International Security and Commerce Program Project Director for the Defense Technology Base Assessment Project of the Office of OTA, which is doing very important work in this area as well.

We are very pleased to have all of you here. I know you are all busy, but you bring very important perspectives and we want to make sure that we hear them and incorporate your views in the work we do.

Now let me yield to Senator Pressler.

Senator **Pressler**. Let me welcome the witnesses. Thank you, Mr. Chairman.

I am very interested in this hearing. Some of the items that I hope are covered by Dr. Shaw particularly is the issue of maintaining the defense technology base, and in addition to that, our need for critical and strategic raw materials that underpin that base. I would appreciate hearing any comments on how adequate the stockpiling of such materials is in your judgment.

Thank you, Mr. Chairman.

The **Chairman**. Thank you, Senator Pressler.

Senator Shelby.

OPENING STATEMENT OF SENATOR SHELBY

Senator **Shelby**. Mr. Chairman, I will try to be brief.

I, too, want to welcome the witnesses here and I want to commend you for these series of hearings. I think we have learned a lot here.

Gentlemen, Tuesday's papers announced, as most of you know, the purchase of a division Perke and Elmer by a coalition of several U.S. companies, including IBM and DuPont. The division makes special electron beam equipment used to manufacture semiconductor chips. Its purchase by this consortium will enable U.S. industry to retain an important cutting edge in technology people say, and I personally commend these American companies for employing a creative solution to retain their access to the future.

Other witnesses are the representatives of the Office of Technology Assessment who have proposed the creation of a civilian technology agency that would act as a liaison between the private manufacturers and the federal government.

I would be interested, as you get into this today, in your opinion of the usefulness of such an agency if it were created.

Thank you, Mr. Chairman.

The **Chairman**. Thank you very much, Senator Shelby.

Mr. Paul, we would be pleased to hear from you first.

STATEMENT OF WILLIAM F. PAUL, EXECUTIVE VICE PRESIDENT, UNITED TECHNOLOGIES CORPORATION; REPRESENTING THE AEROSPACE INDUSTRIES ASSOCIATION

Mr. **Paul**. Thank you, Mr. Chairman.

I am Bill Paul, Senior Vice President, United Technologies Corporation, representing the Aerospace Industries Association.

I will limit my remarks this morning to the AIA's principal areas of agreeement with Senator Dixon's bill, S. 1379, to reauthorize and amend the Defense Production Act of 1950, and S. 2168, the Defense Production Act Amendments of 1990, introduced by Senator Garn on behalf of the administration. I will also offer suggestions where we believe different approaches would be more effective in strengthening the defense industrial and critical technology base.

Mr. Chairman, you are to be commended for this committee's leadership in carefully examining solutions to the issues facing our defense industrial and technology base. You and your colleagues, especially Senators Dixon and Heinz, have documented that in light of our increasing global economy and the migration of industries to other sources there is an increase in procuring items of critical technologies from foreign sources. However, without first determining the effects of globalization on subcontractors, we really do not know if in fact we are dependent upon foreign sources. There are complex, systemic reasons for this and for the deterioration of our defense industrial base. Your hearings have addressed these issues and the legislation before your committee proposes some solutions.

I would like first to talk about the status of our aerospace industry.

The aerospace industry in America today represents the only United States manufacturing business segment with a significant positive balance of trade. We think that's very significant. Currently, the surplus of balance in trade stands at $20 billion. The industry is strategically and economically important to the nation. Our worldwide sales in 1989 exceeded $121 billion. New orders worth $157 billion were placed and the industry's backlog at the end of 1989 stood at over $230 billion. The aerospace firms employ 1.3 million people, including 250,000 scientists and engineers and 500,000 people who are a trained high technology work force.

These are impressive numbers. But the industry is under great pressure from many quarters, including the declining defense budgets, our own government's procurement policies, and foreign competition.

The United States today accounts for about 62 percent of the world's aerospace market. Europe has about 30 percent and Canada and Japan split the rest. A large proportion of our market share consists of sales of defense, space and missile products. Clearly, the United States share of the defense side of the market will shrink due to United States spending cuts and to the desire of Europe, Japan and other nations to develop their own domestic defense industries. As recently as 1983, we held an 8.5 to 1 favorable defense-trade balance with Europe. That ratio dropped to 1.7 to 1 by 1987 as security assistance programs declined and were increasingly focused on fewer programs. We must make up the difference through increased commercial sales, including commercial sales of defense systems and items abroad.

As we look ahead to 1992, we see that Europe's aerospace companies are large, well-financed, and actively backed by their governments, and they are technically proficient. I believe today that Europe, not Japan or Korea, is the aerospace industry's immediate competitive threat as we enter the 21st century.

As a result of our growing global marketplace, we have seen other nations increase their skills in developing specific products. This has been particularly true in the world of commercial products. For the first time in history, emerging commercial products are driving the development of military items, therefore increasing the use of foreign sources for military components.

The Aerospace Industries Association is committed to ensuring the domestic development of critical technologies and has established a non-profit foundation, the National Center for Advanced Technologies, to provide a forum for joint cooperation among industry, government, and academia. The National Center is coordinating the AIA's program for key technologies for the 1990's by developing a national consensus on the advancement of future technologies deemed essential for success in international competition. There is, I believe, a demonstrated need in this nation for increased Government encouragement of industry consortia to develop highly advanced technologies. Currently, joint industry cooperation is reviewed on a case-by-case basis, thereby discouraging industry from pooling its resources to strengthen the ability of U.S. industry to compete internationally. Therefore, I support and applaud the provisions of S. 1379 which will provide protections to companies in undertaking plans of action within the scope of this consortia.

I would like now to turn to offsets. Offsets are a very complex issue. I wish there were better selling tools than offsets. I am sure that Detroit doesn't like rebates. But so long as buyers and sellers are free to bargain and compete, competing sellers will offer inducements to buyers. S. 1379 recognizes this reality. The bill does not eliminate offset arrangements. Instead, the bill seeks to assess the impact offset arrangement might have on the industrial base by requiring contractors to report any offset arrangement exceeding $5 million. However, AIA believes the contract-by-contract reporting requirements in section 114 would seriously jeopardize the ability of U.S. companies to compete successfully in the foreign military market. Much of the information sought under section 114 would be burdensome for industry, add little to our knowledge of what is happening to the defense industrial base, and why. Furthermore, such data, if not properly used, could damage our chances of continuing to win sales and to maintain our current trade advantage in defense items.

There is a concern that offsets injure the defense industrial base. But offsets annually total $2.5 billion. That $2.5 billion must be placed in the context of total sales in the aerospace industry exceeding $121 billion and international sales of $31 billion.

In my personal experience, I have found that there are four key factors for success in defense export sales. The first is political; the second is financing; the third is industrial participation of which offsets are a part; and the fourth is product.

In defense export sales, the best product does not always win. The outcome of the competition is very often decided by which package best meets the requirements of the internal domestic politics of the customer nation. Foreign competitors vying for a third country's business generally have two avenues for improving their competitive standing. One is competitive financing terms and the other is industrial participation or offsets or counter-trade. Our foreign competitors generally can offer better financing terms than we can. Their governments will finance military export sales, we are denied access to government-sponsored financing for military export sales. Industrial participation or offsets is the only competitive bargaining tool readily available to U.S. firms. We believe we have used it effectively and responsibly. Governmental interference with offsets, beyond legitimate concerns for transfer of technology and compliance with national security interest, cannot help our ability to compete.

For the sake of brevity, I think I will stop at that point and continue with the rest of my statement for the record.

[The complete prepared statement of William Paul follows:]

STATEMENT OF WILLIAM PAUL

Good morning, Mr. Chairman.

I am Bill Paul, Senior Vice President, United Technologies Corporation, representing the Aerospace Industries Association.

I will limit my remarks this morning to AIA's principal areas of agreement with Senator Dixon's bill, S.1379, to reauthorize and amend the Defense Production Act of 1950, and S.2163, the Defense Production Act Amendments of 1990, introduced by Senator Garn on behalf of the Administration. I will also offer suggestions where we believe different approaches would be more effective in strengthening the defense industrial and critical technology base.

Mr. Chairman, you are to be commended for this committee's leadership in carefully examining solutions to the crisis facing our defense industrial and technology base. You and your colleagues, especially Senators Dixon and Heinz, have documented that in light of our increasing global economy and the migration of industries to other sources there is an increase in foreign dependence. However, without first determining the effects of globalization on subcontractors, we really do not know if in fact we are dependant upon foreign sources. There are complex, systemic reasons for the deterioration of our defense industrial base. Your hearings have addressed these and the legislation before your committee proposes some solutions.

Status of the Aerospace Industry

The Aerospace Industries Association of America today represents the only U.S. manufacturing industry with a positive trade balance. Currently, the surplus stands at $20 billion. The industry is strategically and economically important to the nation. Our worldwide sales in 1989 exceeded $121 billion. New orders worth $157 billion were placed and the industry's backlog at the end of 1989 stood at $233 billion. Aerospace firms employ 1.3 million people, including 250,000 scientists and engineers and 500,000 trained workers.

These are impressive numbers. But the industry is under great pressure from many quarters: declining defense budgets, our own government's procurement policies, and foreign competition.

The United States today accounts for about 62% of the world's aerospace market, Europe has about 30% and Canada and Japan split the rest. A large proportion of our market share consists of sales of defense, space and missile products. Clearly, the U.S. share of the defense side of the market will shrink due to U.S. spending cuts and to the desire of Europe, Japan and other nations to develop their own domestic defense industries. As recently as 1983 we held an 8.5 to 1 favorable defense trade balance with Europe. That ratio dropped to 1.7 to 1 by 1987 as security assistance programs declined and were increasingly focused on fewer programs.

We must make up the difference through increased marketing of commercial and defense systems and items abroad.

As we look ahead to 1992, Europe's aerospace companies are large, well-financed, actively backed by their governments, and technically proficient. I believe today, that Europe, not Japan or Korea, is the aerospace industry's immediate competitive threat as we enter the 21st century.

Mr. Chairman, the Defense Production Act of 1950 contains provisions proven to be useful to the Department of Defense in assuring that U.S. manufacturers and suppliers will give priority to the requirements of providing for the national defense. Reauthorization of the Act has become routine. However, in 1984 and again in 1986, Congress amended the Act to direct attention to the impact of foreign trade on the defense industrial base. Last year, Senator Dixon introduced S.1379 to update and amend the Defense Production Act to stem the erosion of our defense industrial and technology base. In doing so, Senator Dixon necessarily raises important questions about the role of government with respect to the competitive future of American industry.

As a result of our growing global marketplace, we have seen other nations increase their preeminence in developing specific products. This has been particularly true in the world of commercial products. For the first time in history, emerging commercial products are driving the development of military items, therefore increasing the use of foreign sources for military components.

AIA is committed to ensuring the development of critical technologies and has established a non-profit foundation, the National Center for Advanced Technologies, (NCAT) to provide a forum for joint cooperation among industry, government, and academia. NCAT is coordinating AIA's Key Technologies for the 1990s by developing national consensus on the advancement of future essential technologies for global industrial competitiveness. There is a need in this nation for increased government encouragement of industry consortia on a broad based level to strengthen our defense industrial base. Currently, joint industry cooperation is reviewed on a case by case basis, thereby discouraging industry from pooling its resources to provide further competitiveness. Anti-trust measures should be established to provide industry with protection from criminal or civil suits when undertaking a plan of action within the scope of the character of the sanctioned consortium.

I will address some major specifics of S.1379.

Title I

We are in agreement with most of Title I of the bill with several key exceptions. The most notable being our opposition to Section 114's treatment of offset agreements, Section 127 amendments to the Exon-Florio provisions and those definitions in Section 122 which would virtually disqualify some major defense contractors as a "domestic source" for purposes of the Defense Production Act.

Offsets

I wish there were better selling tools than offsets; I am sure Detroit does not like rebates. But so long as buyers and sellers are free to bargain and compete, competing sellers will offer inducements to buyers. S.1379 recognizes this reality. The bill does not eliminate offset arrangements. Instead, the bill seeks to assess the impact offset arrangements might have on the industrial base by requiring contractors to report any offset arrangement exceeding $5 million. However, AIA believes the contract-by-contract reporting requirements in Section 114 would seriously jeopardize the ability of U.S. companies to compete successfully in the foreign military market. Much of the information sought under Section 114, would be burdensome for industry, add little to our knowledge of what is happening to the defense industrial base and why. Furthermore, such data, if not properly used, could jeopardize our chances of continuing to win sales and to maintain our current trade advantage in defense items.

There is a concern that offsets injure the defense industrial base. But offsets annually total $2.5 billion. $2.5 billion must be placed in the context of total sales in the aerospace industry exceeding $121 billion and international sales of $31 billion.

In my personal experience, I have found that there are four key factors for success in defense export sales: 1. Political. 2. Financing. 3. Industrial Participation (Offsets). 4. Product.

In defense export sales, the best product does not always win. The outcome of the competition is very often decided by which package best meets the requirements of the internal domestic politics of the customer nation. Foreign competitors vying for a third country's business generally have two avenues for improving their competitive standing. One is competitive financing terms and the other is industrial participation or offsets and counter-trade. Our foreign competitors generally can offer better financing terms than we can. Their governments will finance military export sales; we are denied access to government-sponsored financing for military export sales. Industrial participation or offsets is the only competitive bargaining tool readily available to U.S. firms. We have used it effectively and responsibly. Governmental interference with offsets, beyond legitimate concerns for transfer of technology and compliance with national security interests, cannot help our ability to compete.

To meet the industrial impact issues raised by Section 114 of S.1379, AIA recommends a systematic examination of those subsectors which are considered critical to the production of key parts and components of major weapons systems, and which seem to be showing signs of particular weakness. This process should pay particular attention to sectors in which the number of firms doing business with DoD and its major contractors has shown a marked drop. Solutions would be based on a study of the reasons why domestic products have been replaced by foreign components in major defense systems. The study should examine the impacts of U.S. government procurement policies, foreign government subsidies, offset requirements, and difficulties associated with production processes, including environmental siting problems.

Definition of "Domestic Source"

Section 122 would classify many major defense contractors as nondomestic sources for the purposes of the Defense Production Act. Under this provision a business entity would be required to perform all of its research and development, engineering, manufacturing, and production activities within the U.S. to be a considered a defense contractor of the United States. The effect of this provisions is to discourage dual-use technology and thereby, to weaken the competitive strength of firms seeking to do business with the government. As Congress develops solutions for overcoming deficiencies in the defense industrial base, care must be taken not to cut ourselves off from the best that's available. Often the best will be supplied by firms extremely active in international competition. These firms may not meet the definition of domestic sources for purposes of the Defense Production Act.

Title II

AIA supports Part A of Title II which addresses industrial capability. While AIA recognizes that national security and the national economy are interrelated we caution against interpreting Section 202 to mean that national economic policy should be driven by national security concerns. This could lead to a nationalist, mercantilist, trade policy contrary to our belief in a free market system.

Part B of Title II, Encouraging Improvement of the Defense Industrial Base, introduces new procurement procedures which will increase the complexity and confusion rampant in the current procurement process. These provisions specifying domestic sourcing actually are unnecessary and counter-productive to the development of internationally competitive suppliers.. The fact is that today any supplier of items using critical technologies who cannot compete in the world market is not a world class supplier when measured by quality, technological capability, and reliability. If the supplier is world class, cost alone is not going to be the discriminator. The development of domestic sources can best be accomplished through development of suppliers who attain world class competitive standards.

I would suggest two policy changes which would provide a true stimulus to the industrial base.

1. Full Cost Allowability for IR&D/B&P

Industry Independent Research and Development (IR&D) and Bid and Proposal (B&P) efforts play a critical role in maintaining our technological leadership and preserving the strength of our defense industrial base. Despite its importance, industry is currently required to subsidize the cost of IR&D/B&P because, unlike other overhead costs, the government places a ceiling on the amount of IR&D/B&P costs that a contractor can allocate to government contracts. By failing to pay its proportionate share of IR&D/B&P, the government requires industry either to return less money to its shareholders, reduce its IR&D/B&P investment, or transfer the costs to non-government customers. IR&D/B&P is vital to the security strategy of the United States and to a competitive American economy. Both our security strategy and our industrial competitiveness are based in technology developed in part through IR&D/B&P. The Defense Production Act should be amended to require that all IR&D/B&P costs be treated, like other overhead costs, as a normal cost of doing business.

2. Higher Progress Payment Rates for R&D and Production of Critical Technologies

In recent years, the Congress and the Department of Defense have enacted a number of major policy changes which have adversely impacted the health of the defense industrial base. A reduction in progress payments from 90% to the current level of 80% (for large businesses) has been among the most damaging. The reduced cash flows resulting from the progress payment rate reduction have made it extremely difficult for DoD contractors to attract new investors and sustain their private research efforts. Higher progress payments are essential if we are to maintain a strong research and development and investment oriented defense production base. We recommend that Title III of the DPA be amended to provide for higher progress payment rates for companies engaged in research, development or production of critical technologies.

Mr. Chairman, we thank you for the opportunity to appear before your Committee today and hope that in identifying our specific areas of concern we can work together to strengthen our defense industrial base.

Senator SHELBY. Thank you.
Mr. Koontz.

STATEMENT OF JAMES L. KOONTZ, PRESIDENT AND CHIEF EXECUTIVE OFFICER, KINGSBURY MACHINE TOOL COMPANY; REPRESENTING NATIONAL CENTER FOR MANUFACTURING SCIENCES

Mr. KOONTZ. Thank you, Mr. Chairman.

I am pleased to be here today to discuss our defense industrial base.

I am the Chief Executive Officer of a machine tool company in New Hampshire. I also serve as Chairman of the consortium, the National Center for Manufacturing Sciences; and am a current member of the Defense Science Board via the absorption of the Defense Manufacturing Board.

Our ability to remain at peace, as well as compete with the rest of the world depends upon the strength of our industrial base. Today, it is widely acknowledged that America's technological superiority has diminished. This is due to the U.S. neglecting its industrial capability, while ambitious efforts of other nations were directed to building up their own. They have implemented new and more efficient management tools to generate technology and market share.

Through necessity, they pioneered the concept of cooperation or collaboration between industry, Government and academia. They pooled their resources, both human and capital, to more effectively compete in the international environment. As a result, the American industrial base operating independently and in many cases as adversary continues to deteriorate.

In a recent interview of 750 U.S. chief executives, conducted by Ernst & Young, the consensus of the executives was not only that America's technological edge is declining, but the slide will continue over the next 5 years. Even more alarming, this group of CEO's were worried about having enough capital to operate or expand their companies. Obviously, little or no new technology vital to our national security is going to be developed under these conditions. I concur with the results of this study. My own company no longer has the needed capital to do the necessary R&D. Reluctantly, I have also turned to foreign sources for my technology. In the long term, this is not healthy economically or for national security.

The Defense Production Act has been a cornerstone of our national security industrial base and mobilization planning for over 40 years. It is the primary mechanism used to implement action to mitigate peacetime defense production problems and preserve technologically critical defense manufacturing capabilities. The DPA was developed in a time when the United States was the world economic and technological leader.

The DPA was needed then, and is even more important today. United States industry is facing increasing global competition employing more efficient methods for the development and transfer of technology. The results being the continuing decline in market share and capital to support the vital technologies needed for our national security. Industry must get access to lower cost capital and better methods for the transfer of technology.

However, in the midst of the worrisome reports about our inability to compete and our ever-declining industrial base, there are some encouraging signs. Obviously, the American people in general have a better understanding of the linkage between our economic well-being and our national security. We are recognizing the value of cooperation—R&D consortia are becoming commonplace. Some 150 such joint operations are registered with the Government.

The organization I am associated with, the National Center for Manufacturing Sciences, is beginning to yield important dividends.

We need to further relax antitrust laws to encourage joint production and joint export marketing efforts. Federal technology transfer laws have been changed and the potential payoffs are there, but they must be nurtured.

The NCMS is currently working with the Department of Energy in an effort to transfer their technology to the private sector. The Department of Defense represents even a greater potential. All good signs. We are beginning to recognize that new ways and means must be employed to maintain both our economic well-being and our national security.

When I began my remarks, I indicated my strong support for the Defense Production Act Amendments, S. 1379. In closing, I would like to re-emphasize my views and suggest several enhancements that will strengthen the defense industrial base.

There has never been a time in the history of our nation, whether during war or peace, that the need to restore strength to our industrial base has been more critical. While we have amassed an impressive array of advanced technologies in weapons and surveillance technologies during the last decade, we have relinquished the ability to produce them. Many can be produced by our trading partners around the world, but we cannot produce them here at home effectively. Although I hope we will never again experience the hostilities, I am not, nor do I believe the nation should be prepared to wager the security of our nation on my hopes. Therefore, it is increasingly important that we preserve and strengthen our capability to produce the defense materials needed to sustain our freedom, should it ever become necessary.

I urge you to support the reauthorization of the Defense Production Act, and additional measures that would prove beneficial. Let me suggest a few that would improve cooperation throughout the defense industrial base, promote research, development and maturation in vital production technology areas and capitalize on the vast expenditures made in the recent past by and on behalf of the U.S. Government.

First, all Government contractors, particularly defense contractors, should be encouraged and provided incentives to participate in U.S. research, development, technology transfer and production consortia. The National Center for Manufacturing Sciences, the nation's largest R&D consortia, represents an excellent example of the type of collaborative effort necessary if the United States is to survive in the production environment of the 1990's and beyond.

This could be accomplished by allowing Government contractors to include full recovery of their cooperative R&D costs, including dues, research contributions and other related expenses incurred in active participation in organizations such as the National Center for Manufacturing Sciences as allowable R&D reimbursable costs, allowable in their contracts. Contractors are currently not allowed to bring the benefits of cooperative leveraging to Government contracting.

Second, we must tear down the adversarial barriers that have existed for all too long between Government and industry. Quite simply, the Government and industry must become equal partners in restoring our industrial strength and shaping our future. This goes beyond mere words and requires the commitment of resources by both parties—industry supplying all the human resources and say half of the money, with Government supplying one-half of the money which can be further leveraged depending on the project undertaken.

This could be accomplished by expanding title III to allow support of relevant consortia through grants from the revolving fund. I have attempted to compile a list of critical commodities for my industry. But, for example, for one of those alone, control technology, our Japanese trading partners have initiated $1 billion research effort referred to as "Intelligent Manufacturing Systems" as an international effort. I am not in favor of entering a program where the U.S. industry would relinquish its remaining vestiges of technological superiority. Quite to the contrary, I believe we must put forth efforts of comparable size, direction and importance to U.S. industry. This will require substantially more than the revolving fund limit of $250 million. Our trading partners are expending billions and we must do likewise.

As a related issue, I must add that interagency cooperation and co-funding on research, development and technology transfer efforts of this nature should be strongly encouraged.

I think I'd better stop at this point because I had a 10 minute statement and I see I only have 5.

[The complete prepared statement of James L. Koontz follows:]

Hearing before the

UNITED STATES SENATE
COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS

ROOM 538 DIRKSEN SENATE OFFICE BUILDING

Washington, D.C.

Testimony of

James L. Koontz

President

Kingsbury Corporation

Keene, New Hampshire

March 22, 1990

Mr. Chairman and distinguished members of the United States Senate Banking Committee, I am James L. Koontz, President and CEO of Kingsbury Corporation. I also serve on the Defense Manufacturing Board, now part of the Defense Science Board, and am the Chairman of the National Center for Manufacturing Sciences. In the past, I was Chairman of the NMTBA, the Association for Manufacturing Technology.

I welcome this opportunity to appear before you today, in support of the reauthorization of the "Defense Production Act of 1950", and S. 1379, the "Defense Production Act Amendments of 1989". I spent my entire career out on the factory floor addressing the production needs of our defense and commercial industrial base. I gained my share of bruised knuckles and cut fingers, and more often than not, I am the one with grease and dirt under my finger nails. My remarks reflect my first hand experience with the critical industries and technologies needed for the security of our nation.

I have seen my share of technology and more than my share of change. Quite frankly, I don't like what I have seen in recent years. I recall, not too long ago, when American manufacturing meant the best production technology, unparalleled products, leadership and a strong industrial base. Today, all that stands in disarray.

Think back to as recently as the late 70s and early 80s. In the United States, we could develop advanced weapons systems and the production processes and technology to bring them to fruition and full deployment. I don't have to tell you that those are just memories of our past. When we gave up the consumer electronic markets, the expansive markets that paid for expensive production technology research, we began to give up our capabilities in defense electronics. This erosion continues today.

When our trading partners in Japan, Taiwan and Korea concentrated on consumer products, employing precision parts such as disc drives and optical feeders and utilizing diamond turning systems, we relinquished much of our lead in defense needed precision machine tools. Again, this erosion continues today. When we neglected the machine tool control systems, one company in Japan, with the support of its government, took my industry by storm and now owns the lion's share of the U.S. controller market, the key to productivity and precision improvements for virtually every manufacturing process and technology. Once again, the erosion continues today.

I am sure that you, as I have from my vantage point in industry, from my position as Chairman of the National Center for Manufacturing Sciences and from the Defense Science Board, have listened to innumerable horror stories and read the many blue ribbon prestigious studies that have been undertaken on the status of our industrial base. The message has been, and is always the same, "We have neglected our industrial base for far too many years. The time has come when we can no longer neglect our manufacturing industries if we wish to reap the benefits of our past defense expenditures, thereby maintaining a secure and free nation and enjoying the so called "peace dividend".

We let ourselves go once before, after WWII. As a result, by 1950, when the Korean conflict demanded our attention and support, the industry in the United States that produced the defense materials that saved the world and secured our freedom, could not meet our security needs. Where we have fallen into this abyss, once again, today, in 1990, I hope that like 1950, it is not too late to recognize our dilemma and to take strong, corrective actions. Mr. Chairman, this is why I am here today, to urge you personally, the Senate Banking Committee, all of Congress and the Administration to recognize the breadth and magnitude of our national dilemma and to begin the process of restoring our industrial strength.

Our problems today are not any less important than they were in 1950 when the Defense Production Act was enacted, simply because we are not now involved in armed conflict. In fact, our problems are more critical today. In the 50s, advanced technologies both for weapons and production systems were not prevalent around the world. Today, all that has changed.

We must face up to the fact that advanced technology is out of the bag. For instance, in almost any issue of the Polish journal "Gazeta Torgowa" a computer buff's shopping paradise, literally all sorts of COCOM restricted computer technology is being offered. Advertisers offer powerful chips, high density large hard disc drives, as well as a full array of components needed to construct powerful top of the line computers. If advanced technology is offered this blatantly, just imagine what doesn't make its way into print. Our allies and adversaries have advanced technology in all areas. In fact, many have much stronger industrial bases and more advanced production technology than most domestic firms.

In addition, by concentrating on the mass production, rapid turnover consumer markets, many of our trading partners, including potential adversaries, have industrial engines driving their manufacturing industries with important dual-use type technologies. They are advancing at a rate that has, and can continue to far outpace the rate of technology and industrial change in the United States. We must stop operating as if it were 1949.

Like 1950, we must act decisively and we must act now. In your invitation letter to me, you posed several questions and I want to address them here, because they each bear direct relevance to my concerns.

Question 1

Do you believe that current systems for gathering and assessing data on the extent of foreign dependencies among prime contractors and subcontractors of defense materials are adequate? What changes in our current assessment policies and practices would you recommend, if any?

Answer

In viewing numerous studies by both commercial and government organizations, it is obvious we have no reliable method of assessing the extent of foreign dependency on a broad scale. Even on a micro-level, such as my own industry ("machine tools"), there is no reliable knowledge of foreign dependencies.

Personally, I have attempted to put together a list of commodities that my industry considers vital. This list includes CNC controllers, motors, electronic drives, ball screws, machine ways, etc. The top of the line, state-of-the-art in each of these commodities are foreign sourced.

I understand from a recent Defense Manufacturing Board Subcommittee meeting, that DARPA has completed a study of our foreign dependencies. Although the study has not been released yet, from the comments I have heard, and press reports I have seen, we are a heavily dependent nation. We cannot afford to wait for a national emergency to determine we cannot build a single major weapons system domestically. I urge you to undertake the necessary legislative actions to ensure we truly know and understand our foreign dependencies.

Question 2

Do you have concerns that foreign companies might become the sole source of certain equipment or technologies vital to our national security?

Answer

Yes, I think anyone producing products for national security purposes, would share this concern. Considering the fact that we do not know the extent of our overall dependency on foreign products, it is a difficult problem to solve.

Let me point out one small example. It was just about a year ago when Hitachi purchased Ceraclad Corp. Ceraclad was a critical supplier of advanced, fourth generation ceramic chip carrier technology to the Department of Defense. This is integral to our avionics needs. Since the purchase, Hitachi has transferred all intellectual property, know-how, etc., to Japan and shut down Ceraclad. The U.S. no longer possesses the capability that we invested heavily in during recent years. We must develop a new capability or depend on a foreign company to retain this capability and supply our needs. Do we really want to risk our future on this type of recurring situation?

In my own industry, machine tools, I have a great concern that one could virtually build a state-of-the-art machine tool using all foreign components - the only U.S. content being labor. This is alarming and completely unacceptable.

I believe that we, government, industry and academia, together must quickly address this problem of foreign dependency by supporting U.S. industries, especially those that are critical to our national security, in their efforts to remain globally competitive.

We must create the environment and provide the resources, on a matching funds basis, to both create technology and effectively integrate the technology into our critical industries.

Question 3

Do you believe the Federal Government should make greater efforts to foster the development of domestic based defense related technologies either directly through funding programs or indirectly through encouraging joint industry cooperation or compulsory licensing of foreign technology?

Answer

Yes, the government should continue and expand its U.S. generated technologies. This should be done on an equal sharing of monies and/or resources with the private sector. With both sectors having financial involvement, the process of technology transfer will be accelerated.

Both you and I know that all of our major trading partners have amassed their industrial strengths using this approach. They continue today, and in fact, have accelerated the pace of their activities.

Permit me one example, the Intelligent Manufacturing System (IMS) initiative by Japan's MITI. Although it is being described as an international effort, it couldn't be further from the truth. Presently, it is limited to the partners that MITI picks. Many of our closest allies on the Pacific Rim would be excluded. In addition, it is directed at one of the few remaining areas where the U.S. retains technological superiority. We would lose.

Although it might be possible to find areas that could benefit all of the industrialized world, including the United States, this is not the case for the IMS. I would rather see the government focus on aggressively supporting broad based consortia that can provide both national security and industrial competitiveness. This means that the government must focus on identifying and eliminating barriers that inhibit U.S. companies from collaborating, to develop and transfer technology, manufacture and export market their products.

The idea of compulsory licensing of foreign technology has some serious consequences. Many countries could, or would, use this provision to gain access to intellectual property rights in trade for marketing rights, patents, etc., within their country. Rather than further depleting our technology, I would get on with development of our own technology needs than to agree to compulsory licensing of foreign technology.

We still have too much to lose.

Question 4

Do you believe that current mechanisms to facilitate the transfer of high technology defense research into benefiting civilian related technologies are adequate? What policy changes, if any, would you recommend?

Answer

In general, current mechanisms are weak, but probably are adequate. What needs to be changed is "attitude". We need someone in government to provide the initiative to instill full cooperation with the private sector to jointly disseminate non-classified technology to the private sector. In some cases, policies and procedures may have to be changed to improve the transfer of technology to "small business". These small businesses do not have the resources, time or know-how to get involved with government agencies for the transfer of technology. The machine tool industry is an example. In these cases, an organization or consortium such as the National Center for Manufacturing Sciences, could be the conveyor of technology transfer.

Let me elaborate. Although the U.S. has expended hundreds of billions of dollars in the past decade or more on research, there is no inventory of the intellectual property that might be transferred. It is just sitting there and if you are fortunate enough to chance across some and it meets your technology needs at that time, you have plenty of financial resources at your disposal and everyone in the government cooperates smoothly and quickly, maybe, just maybe you will successfully transfer the technology. Unfortunately, the odds are not in industry's favor, particularly small business.

Consortia like the National Center for Manufacturing Sciences, on the other hand, offer a unique opportunity. Consortia can aggregate demand. This is the "pull function" critical to the success of technology transfer. For instance, the National Center for Manufacturing Sciences knows of literally hundreds of manufacturing processes and technologies needed by its members. We then can apply the resources, not available in most companies, to seek out useful technologies.

By way of example, the National Center for Manufacturing Sciences is pursuing a memorandum of Understanding between itself and the Department of Energy. On the DOE Defense Programs, the Center has identified an Advanced Manufacturing Initiative with numerous technologies and activities of interest. A small sampling includes:

- Precision Machining
  - Diamond Turning
  - Hazardous Material Handling
  - Advanced Materials
  - Manufacture and Measurement of Small Spheres

- Process Controls
  - In-process Precision Measurements
  - Control of Temperature and Vibration
  - Error Budget Analysis
  - Deterministic Manufacturing
  - Tool Wear Measurement and Compensation

- Manufacturing Practices
  - Numerical Control Manufacturing
  - Small Lot Scheduling
  - Personnel Training
  - Computer Aided Design with PCs

- Manufacturing Deployment Centers
  - Training and Education
  - Equipment Testing/Verification
  - Joint Development
  - Manufacturing Internships

- Measurements
  - Coordinate Measuring Machines
  - Non-contact Gauging

- Controllers
  - Real Time Control
  - Advanced Software

- Flexible manufacturing
  - Computer Integrated Manufacturing
  - Robotics
  - Tool Management
  - Small Batch Processing

- Quality Control
  - Continuous Quality Improvement
  - Statistical Process Control
  - Integrated Design for Manufacturing and Assembly

- Laser Cutting and Welding
    - Advanced Lasers (e.g., copper)
    - Plume Analysis Diagnostics
    - Fiber Optics

- Waste Handling and Reduction
    - Solid Machine Chips Handling
    - Coolant Recycle and Disposal
    - Near Net Shape Forming
    - Environmental Compliance

- Computer Applications
    - Expert Systems/Artificial Intelligence
    - Finite Element Modelling
    - Mechanical Machine Design

Our members have identified a strong need for all of these areas. By working collaboratively, industry and government will be able to inventory, access and transfer much more of our research developments into productive operations across all of industry.

Before I leave this subject, I would like to point out the obvious. The questions that you have asked and S. 1379 will not and cannot by themselves, ensure a long-term, strong, sound industrial base. There are too many other influences that impact every company in this nation. Again, numerous studies have highlighted the repressive nature of our tax system, trade laws, anti-trust legislation, cost of capital, fiscal policy, environmental policy, and a whole host of additional areas. My intent is not to review each of these with you, rather, it is to indicate that each must be scrutinized for its effects on our industrial base. We must be honest enough to recognize that all areas must be dealt with by Congress and the Administration. And we must be committed enough to pursue each action until we achieve the desired results.

When I began my remarks, I indicated my strong support for the Defense Production Act Amendments, S. 1379. In closing, I would like to re-emphasize my views and suggest several enhancements that will strengthen the defense industrial base.

There has never been a time in the history of our nation, whether during war or peace, that the need to restore strength to our industrial base has been more critical. While we have amassed an impressive array of advanced weapons and surveillance technologies during the last decade, we have relinquished the ability to produce them. Many can be produced by our trading partners around the world, but we cannot produce them domestically. Although I hope we will never again experience hostilities, I am not, nor do I believe the nation should be, prepared to wager the security of our nation on my hopes. Therefore, it is increasingly important that we preserve and strengthen our capability to produce the defense materials needed to sustain our freedom, should it ever become necessary.

I urge you to support reauthorization of the Defense Production Act, and additional measures that would prove beneficial. Let me suggest a few that would improve cooperation throughout the defense industrial base, promote research, development and maturation in vital production technology areas and capitalize on the vast expenditures made in the recent past by, and on behalf of, the U.S. Government.

- First, all government contractors, particularly defense contractors, should be encouraged and incentivized to participate in U.S. research, development, technology transfer and production consortia. The National Center for Manufacturing Sciences, the nation's largest R&D consortia, represents an excellent example of the type of collaborative effort necessary if the U.S. is to survive in the production environment of the 90s and beyond.

  This could be accomplished by allowing government contractors to include full recovery of their cooperative R&D costs - including dues, research contributions and other related expenses incurred in active participation in organizations such as the National Center for Manufacturing Sciences - as allowable, and encourage IR&D/PB (Independent Research & Development/Bid & Proposal) costs allocable to their contracts. Contractors are currently not allowed to bring the benefits of cooperative leveraging to government contracting.

- Second, we must tear down the adversarial barriers that have existed for all too long between government and industry. Quite simply, the government and industry must become equal partners in restoring our industrial strength and shaping our future. This goes beyond mere words and requires the commitment of resources by both parties.

  This could be accomplished by expanding Title III to allow support of relevant consortia through grants from the revolving fund. I mentioned previously that I have attempted to compile a list of critical commodities for my industry. For one of those alone, control technology, our Japanese trading partners have initiated a billion dollar research effort referred to as "Intelligent Manufacturing Systems" as an international effort. I am not in favor of entering a program where U.S. industry would relinquish its remaining vestiges of technological superiority. Quite to the contrary, I believe we must put forth efforts of comparable size, direction and importance to U.S. industry. This will require substantially more than the revolving fund limit of $250 million. Our trading partners are expending billions and we must do likewise.

  As a related issue, I might add that interagency cooperation and cofunding on research, development and technology transfer efforts of this nature should be strongly encouraged. The Department of Commerce's new Advanced Technology Program, together with DARPA should implement programs involving critical technologies like machine tools that must supply all sectors of the industrial base.

- Third, and last, we must make better use of those technologies we have already paid for. For decades, we have been contracting for the best minds and resources this nation has to offer. We have spent hundreds of billions of dollars, and literally, tens of thousands of advances and discoveries have been made. However, very few, particularly in the manufacturing process area, find their way into practice. We must improve the process of technology transfer in new research starts, as well as our existing resources.

I am pleased to report that the National Center for Manufacturing Sciences has pioneered and established with the government, a successful technology transfer model. Because consortia are able to aggregate demand, they provide an excellent focus for collaborative leveraging of these precious resources. The National Center for Manufacturing Sciences is formalizing this process in a Memorandum of Understanding with the Department of Energy and would like to do so with the Department of Defense. Secretaries Mosbacher and Watkins have embraced the National Center for Manufacturing Sciences' initiative and are encouraging its adoption on a widespread basis. I strongly suggest that you encourage this type of cooperative sharing of activities with relevant consortia in the Department of Defense, as well. There is a wealth of technology in the defense labs, but as yet, no coordinated, efficient approach to access it.

As a final thought, I want to point out that my remarks have dealt only with a short subset of the needs and opportunities. There are no silver bullets out there. It is going to require a lot of hard work by everyone involved. Mr. Chairman, in your remarks on March 1, 1990, you called for the formation of an advisory group. I want to offer my assistance either directly or indirectly through two very important organizations. I am certain that Al Moore, President of NMTBA, and Ed Miller, President of the National Center for Manufacturing Sciences would be willing to support your needs, to put in place a legislative package in modular form, devoted to all of the differing aspects of competitiveness.

This concludes my remarks. I appreciate your giving me the opportunity to share these thoughts with you today, and will be happy to answer any questions that you might have.

The **Chairman**. I appreciate that and when we get into the question period, if there are other points in your presentation that you really want to stress, whether a question is asked or not, I know you will work them in.

Before going to Mr. Dudon, I want to acknowledge Senator Heinz who has arrived and ask if he has any opening comment he wants to make.

Senator **Heinz**. Mr. Chairman, I would like to put my opening statement in the record. I do have a great interest in the views of these gentlemen on the question of offsets, which is dealt with in the legislation before us, and I reserve my questions in that regard until the appropriate time. I particularly want to focus on those offsets that have the effect of requiring the transfer of technology.

Thank you, Mr. Chairman.

The **Chairman**. Very good. I have a statement from Senator Garn for insertion in the record.

OPENING STATEMENT OF SENATOR JOHN HEINZ

Senator **Heinz**. Mr. Chairman, one of the issues I did not have a chance to raise at the last hearing was the problem of offsets. I hope we will have an opportunity to discuss them today with these knowledgeable private sector witnesses.

Aerospace contracts commonly include provisions in the contracts called "direct" or "indirect" buy-backs or offsets. A "direct" offset is a requirement in a contract obligating the seller (the defense contractor) to transfer part of the production or assembly of the item to the purchasing country. An indirect offset requires the seller to market the purchasing country's products. Offset agreements can—and have—amounted to over 100 percent of the value of the item U.S. firms sell to another country.

Congressman John Kasich, in testimony before the Senate Banking Committee, spoke to perhaps the worst aspect of offsets from the U.S. point of view:

> Offset and co-production requirements do not remain exclusively with prime contractors. Rather, the requirement for foreign licensing is levied by the prime contractor upon subcontractors who must then transfer a portion of their production, their weapon system technology, or both, to manufacturers in the purchasing country. To the extent that offsets result in an outflow of technology, the technology involved is that of subcontractors rather than the prime contractors who make the original foreign sale. It is therefore subcontractors who are ultimately placed at a competitive disadvantage from offset and co-production requirements.

Offsets have a significant impact on the competitiveness of critical technologies in the U.S. because they help create competitors. In the Korean Fight Plane case, for example, we were being asked to provide technology to assist South Korea in developing an aerospace industry. Korean government officials publicly boasted that South Korea's goal was to have a competitive aerospace industry in 10 years. Whether that was realistic was not the issue; the issue was the stated intention to use KFP technology as a springboard to develop an indigenous aerospace capability.

After the Korean government said that the contract would go to the firm that fulfills that requirement, The Wall Street Journal (June 7, 1989) reported that U.S. firms were competing "fiercely for the right to teach the Koreans how to compete with them."

It is difficult for me to understand that attitude. South Korea may not yet be a "technically capable foreign competitor," but it is precisely this attitude of benign neglect that the United States took toward VCRs, TVs, semiconductors, microwave ovens, and automobiles. The aerospace industry is among the last of the high technology frontiers in which the United States has a commanding lead.

Mr. Chairman, maintaining a technological lead is not a God-given right. It takes a lot of work. I'm beginning to worry that we're losing our capacity for that work. I hope our witnesses today will convince me otherwise.

STATEMENT OF SENATOR GARN

Senator **Garn**. Today we end a series of hearings on the reauthorization of the Defense Production Act with an examination of the way in which the act affects U.S. industry—both large defense contractors and smaller businesses that generally supply components.

Let me say again that I support DPA authorities and believe they have been vital in ensuring government access to materials and goods critical to national security. I further believe that the United States must have a reliable source of supply for critical materials and products. It would be foolhardy to place ourselves in a position of total dependence on a foreign supplier for potential defense needs. With this in mind, however, I think it is critical that we recognize that strengthening the defense industrial base requires much more than DPA reform. It requires continuing progress on deficit reduction, cutting capital gains rates, reforming anti-trust rules, and improving government support for technology development and implementation.

I look forward to today's testimony.

Thank you, Mr. Chairman.

The **Chairman**. Mr. Dudon.

STATEMENT OF DAVID DUDON, PRESIDENT, MUTUAL TOOL AND DIE, INC., DAYTON, OH; REPRESENTING THE NATIONAL TOOLING AND MACHINING ASSOCIATION

Mr. **Dudon**. Thank you, Mr. Chairman, and good morning.

I am Dave Dudon of Mutual Tool and Die in Dayton, Ohio. I am testifying on behalf of the 3200 member companies of the National Tooling and Machining Association. My company designs and builds tools, dies and special machinery. I employ 88 skilled craftspeople.

I represent the small contractor who provides unique products required by the prime defense, aerospace or automotive companies. I have been in the business for 25 years and many changes have occurred which threaten the existence of shops like mine. Much of this threat comes from off-shore and there are several government policies that further harm our ability to compete.

The Defense Production Act offers several remedies to the decline of our defense and technology base. I will speak to four areas. One, the high cost of capital in the United States; (2) offsets; (3) sanctioned industrial consortia; and (4) improved education and training.

The rapid technological evolution has tremendous impact on small manufacturers. First, we have to have access to increased amounts of capital and must deal with increased requirements for training. According to the study by the Office of Technology Assessment, "Making Things Better," for many of America's 355,000 small and medium-sized manufacturing firms, exposure to new technology is haphazard and efforts to keep informed is beyond their means.

The elimination of both the investment tax credit and the accelerated depreciation provisions stifle investments in production equipment. The 10 percent ITC represented my downpayment on a new machine. Without it, I have to finance the equipment out of retained earnings in an industry where profits may average one to two percent of sales. This is unrealistic.

Computer-controlled equipment is enormously expensive, say $125,000 for one machine. That is a significant burden on the small businessman. To remedy this would include a specific investment tax credit, adoption of a revised depreciation schedule, make permanent the R&D tax credit, reduction of the capital gains rate.

An additional change in international competition, the competitive environment has changed rapidly and substantially because of three major factors—the movement offshore of major U.S. manufacturing facilities; the corresponding purchase offshore of the supporting tools, dies and molds. Second is the development of increasingly high-level technology expertise and skills from foreign firms. Last is the favorable economics of foreign firms such as government subsidies, lower cost of capital, lower employee wages and benefits costs, fewer government mandated costs.

At this point I would like to recount to you some of my own experiences with foreign competition. During the past several years, Mutual Tool & Die has lost business to Japan, Mexico, Canada, and Turkey. A tooling and machining shop is a service industry. Recently, we built and developed a special machine for an automotive firm. The order was for 20 machines. Hundreds of man-hours went into building this machine. All of our cost was up front. It is with the second buy that any profit is made. We shipped the machines to the automotive plant in Mexico. The company came out for a second quote, but we were not selected. The machine is now being produced in Mexico. What I'm saying is, they had the machine in front of them and were able to copy it.

In another instance, we again developed a series of dies for an aircraft engine. The first go around to complete this project was very expensive. We designed and built the dies and shipped them overseas to Turkey. We were actively giving away our technology. This technology was absorbed and when we quoted another series, we lost to the company in Turkey.

Another incident occurred with Japan. We were providing stainless steel manifolds for a firm in Texas. We were very pleased with the order as each piece was valued at $500 and we had an order for 100 pieces. After completing the order, we were quoted again on the same order. This time we lost the order to a company that was located on a ship off the shore of Houston, Texas and they manufactured the parts above the ship. This was a Japanese firm.

These are just a few examples of my experience. It is not unique. Other shops are experiencing similar problems with parts going offshore, literally. This leads me into a discussion of offsets.

Why are offsets a problem for small businesses in this country? Prime contractors understandably seek help from their subcontractors in coming up with ways to compete with European offset requests. Subcontractors have risen to the occasion by transferring technology overseas or by purchasing components from overseas, all in order to help the prime contractor win the sale. Offsets put enormous pressure on the largest U.S. companies to purchase components from overseas and to locate their factories overseas. Business is definitely taken away from small business in the process.

It is essential for U.S. offset policy to be directed at foreign countries with similar policies already in place—Europe, Japan, Canada and Australia—and not at United States companies.

The above countries have been effective in applying offsets in cases where the purchases are made on a government basis. Even though U.S. Government purchases from overseas are relatively small by comparison with Europe, we could consider taking the first step by requiring offsets on these purchases. The Pentagon should consider requiring offsets of European companies.

Mr. Chairman, the issue I'm about to discuss is controversial. I realize how honest differences exist regarding the relaxation of antitrust provisions. Having said that, however, I do feel compelled to offer the view of small business that I represent.

The reason for our interest in forming joint ventures for manufacture and production are several. Foremost is the cost of capital. Through pooling our resources we can afford state-of-the-art equipment. We may be able to do many things, but we cannot do all things best. If we can form brief alliances to qualify us to bid on Government contracts, which we could not qualify to bid alone, that allows us to compete with bigger firms and benefits the Government because we are likely to be able to produce the products more cheaply.

Our industry now appears to be under intense attack from many corners of the globe. Molds and dies from Japan and Taiwan, molds from Canada and Portugal and so on. Because we are such a fragmented industry, dealing in thousands of narrow niches, our companies are highly vulnerable to targeted attacks. And that is what is happening right now. Our companies are being picked off on many narrow fronts simultaneously. These are specialized areas and it is difficult to get an aggregate picture of the magnitude of the assault. But it is a fact and it is happening every day.

I will continue my remarks in any questions you may have. Thank you.

[The complete prepared statement of David Dudon follows:]

National Tooling & Machining Association

NTMA
PRECISION

EXECUTIVE SUMMARY

NATIONAL TOOLING & MACHINING ASSOCIATION
BEFORE THE
COMMITTEE ON BANKING, HOUSING AND URBAN AFFAIRS
UNITED STATES SENATE
MARCH 22, 1990

9300 Livingston Road • Ft. Washington, Maryland 20744 • (301) 248-6200

EXECUTIVE SUMMARY

Mr. Chairman and Members of the Committee:

Thank you for the invitation to discuss the reauthorization and amendment of the Defense Production Act of 1950.

I am testifying on behalf of the National Tooling and Machining Association (NTMA) which represents 3,200 contract tooling and machining shops located in 42 states and organized into 54 local chapters. Our companies manufacture tools, dies, molds, jigs, fixtures, and precision machined parts as well as specialize in experimental research and development.

I represent the supplier or subcontractor level in the defense industrial base chain.

S.1379 addresses many concerns regarding the erosion of our industrial base affecting our national and economic security.

Policy changes which would enhance small businesses' ability to compete include reducing the high cost of capital in this country. Other remedies include a special investment tax credit, adoption of a revised depreciation schedule, making permanent the R&D tax credit and reduction of the capital gains tax rate.

Trade challenges come from fierce international competition. The effects of offsets on small business should be carefully considered. Offsets imposed by European companies result in transfer of technology overseas. We need an American offset policy to harness U.S. purchasing clout. The policy should say:

1) We believe in free trade;

2) Large importers into U.S. bear special responsibility to export more from this country;

3) Imports into the United States above certain levels should be allowed only if the importer achieved an established export level.

Yet another means to help small companies compete relates to the broadening of the authorities in Section 125 which provides for "sanctioned industry consortia." This would allow companies to join together under appropriate circumstances, to pool resources and share risks for the purposes of combining production which will in turn lower costs.

Of the many advantages such an arrangement offers, the most important is alleviating the capital burdens on small owner-operated businesses. Acting alone, many small companies find it difficult to upgrade their production facilities but allowed to operate jointly, the U.S. can also reap the benefits that joint ventures now provide to our major trading partners West Germany and Japan.

A final comment must be made regarding another type of capital -- human capital. The education system both public and vocational is failing our people. People come out of school and need to be trained in basic math skills or have had only limited exposure to science and computer courses. Small firms simply cannot afford the expense of training workers.

We urge that Congress provide adequate funds for training new workers and retraining current workers though tuition grants, training tax credits, and other support to help the workforce gain the skills needed for their future survival in a changing technological work environment.

INTRODUCTION

Thank you, Mr. Chairman and good morning. My name is Dave Dudon, I am Vice President of Mutual Tool & Die Inc., in Dayton, Ohio. I am testifying on behalf of the National Tooling and Machining Association.

Mutual Tool & Die Inc. specializes in designing and building tools, dies and special machinery. I employ 88 skilled craftspeople.

NTMA is the national representative of 3,200 contract tooling and machining shops located in 42 states and organized into 54 local federated chapters. Our companies manufacture tools, dies, molds, jigs, fixtures, and precision production parts, and some firms specialize in experimental research and development work.

Most of NTMA's members are small businesses, averaging 23 employees, yet the industry generates sales in excess of $20 billion a year. The industry supplies the special tooling for such vital industries as aerospace, appliance electronics, agricultural implements, environment and nuclear, among others.

I should also mention that the industry requires a high degree of skill. Despite the sophistication of the equipment used in the industry, it depends as much as ever on the highly refined skills of innovative toolmakers. A toolmaker is trained at great expense usually in a 4 year, 8,000 hour apprenticeship program. Many of our shops use computer-aided design and computer-aided manufacturing in the production of tools and parts precise to a few millionths of an inch.

I appreciate the opportunity to appear before the Committee today in support of S.1379 to reauthorize and amend the Defense Production Act of 1950 (DPA).

S.1379 addresses many concerns regarding the decline of the defense technological industrial base. This trend will continue and worsen unless certain policy changes occur before our ability to compete is unrecoverable As an owner of a contract tooling and machining shop, I represent the supplier level in the industrial base chain. There are four themes I would like to discuss, as well as share with you my personal observations and experiences insofar as manufacturing is concerned.

To preserve our national security and refuel our industrial base, several changes must occur. First, the high cost of capital is especially burdensome to small companies. A broader effort to reduce the deficit encourage a higher personal savings rate and bring interest rates down will go a long way to putting U S business on an equal footing with our major trading partners Japan and West Germany. Second, the practice of using offsets in foreign military sales should be reconsidered or eliminated or the U.S. should develop an offset policy that mirrors the policy of the purchasing country.

Third, we support the idea of sanctioned industry consortia addressed in Section 125. The bill does provide for the pooling of resources for joint manufacturing ventures but not for small business. We would like to speak on the advantages of a notification process which I will expand later.

Last, but exceedingly critical is the education system and the need for better training for our workforce.

Manufacturing technology is growing by leaps and bounds. Neither the vehicle for wide disbursement of this technology nor the financing mechanisms needed to acquire the technologies are in place. Large firms have the necessary capital to keep abreast of technology advances, small firms do not According to the Office of Technology Assessment (OTA) study entitled Making Things Better, "For many of America's 355,000 small and medium sized manufacturing firms, exposure to new technologies is haphazard, and the effort to keep informed is beyond their means." (p.23)

Certain economic incentives and improvements in the U.S. investment environment would make America's financial climate more conducive to critical long term investment.

AREAS NEEDING REMEDIES

Tax policy is a defacto industrial policy. When Congress eliminated both the investment tax credit and the accelerated depreciation provisions it stifled investment in productive equipment The 10% ITC represented a small manufacturer's down payment on a new machine Without it, the employer has to finance the equipment out of retained earnings in an industry where profits may average 1 to 2% of sales. This is unrealistic.

Computer controls and automation continue to be enhanced, making the average life of computer controlled equipment 3 years rather than the minimum 7 year depreciation under current law. The law forces manufacturers to keep and use out-of-date equipment.

To remain competitive, our members must invest in sophisticated new equipment, usually computer controlled, that can satisfy exacting performance standards and ensure cost-effective operations. This type of equipment is enormously expensive -- say $250,000 for one machine That may be relatively insignificant for General Motors or IBM, but it s an enormous burden and expense for our small owner-operators. Without the most modern equipment, our shops will not remain competitive in terms of quality, precision, price or cycle time. These machines often have a surprisingly short useful life because they are frequently made competitively obsolete by newer, more productive equipment which is continually being developed.

The average investment in equipment has gone from less than $100,000 ten years ago to $2.2 million on the average today. Most small U.S manufacturers try to stay competitive by taking advantage of preferential terms and rates offered by foreign machine tool manufacturers This is not a preferred method but one that is driven by a lack of realistic and viable alternatives. Domestic banking houses require substantial collateral on assets which can be liquidated rather than providing finance capital on equipment productivity. This practice greatly restricts the ability of the small manufacturer to get the loans he needs to operate his business successfully. To overcome this problem, we feel that loan guarantees should be backed by the government, or, if not, Congress should allow flexible manufacturing networks to negotiate on behalf of the companies involved. Such action is necessary to encourage start-up and expansion or even to allow it to happen.

According to the OTA study, ". . . Japanese loan and loan guarantee programs to small firms are at least 20 times greater than those of the United States, and the level of subsidy in Japan is more substantial." (P.26)

Another option suggested in the OTA study states:

> "Congress might consider several options to encourage firms to invest more in advanced technology and in training support required in the service and to use technology well. One option is the equipment bond leasing program that would make new production equipment available to manufacturers on below market terms." (P.26 OTA).

To deal with these problems, we urge enactment of:

- A special investment tax credit to assist small businesses that lack a significant capital base in obtaining expensive high technology and computer-controlled equipment;
- Adoption of a revised depreciation schedule for computer-controlled machinery to accurately reflect the short life cycle of this equipment, which is much shorter than the seven years now allowed;
- Reduction of the capital gains tax rate to encourage capital formation and investment to stimulate job creation. Again, this idea is endorsed by the OTA study, which suggests that an incentive for longer term investment would be to "adjust the capital gains tax rate to favor long-term gains and penalize short-term asset turnover." (p.21)

Much of what our firms do is both basic and applied research and development. Indeed, many of our firms are almost entirely engaged in R&D activities We urge that the tax code be modified to have the R&D credit shaped more clearly to apply to the activities of industries like ours that are involved in customized production to avoid the anomaly that one of the most R&D-intensive American industries finds it difficult to benefit fully from the tax code's R&D incentives

America's major problem has traditionally been with the commercialization of R&D commercializing work we have so successfully done in applied research. Again and again we have seen other countries take the results of our research and use it in practice to beat our own industries. This country has to quit wasting $30 billion per year on basic research. Small businesses need help with something called "problem-based research." A solution we have recommended is the technical extension agent modeled after agriculture extension agents. These persons would be resource experts and coordinators to assure the U.S. learns to commercialize its R&D before other countries use our basic research to compete with us Virtually everything our industry does is applied R&D -- the kind of practical sophistication that needs to be encouraged in American business. Steps must be taken to ensure that the tax law is targeted to encourage and support this vital activity.

TRADE MATTERS

An additional set of challenges comes from international competition. While there has always been some foreign competition in several sectors, over the past few years there has been a significant increase in both direct and indirect foreign competition. We have seen the competitive environment change rapidly and substantially because of three major factors:

- The movement off-shore of major U.S. manufacturing facilities with the corresponding purchase off-shore of the supporting tools, dies, and molds;
- The development of increasingly high-level technical expertise and skills by foreign firms (largely as a result of past U.S. policies to strengthen these foreign economies); and,
- The favorable economics of foreign firms based on such factors as government subsidies, lower cost of capital, lower employee wage and benefit costs, fewer mandated costs imposed by government regulation and the development of flexible networks.

At this point I would like to recount to you some of my own experience with foreign competition. During the past several years, Mutual Tool & Die has lost business to Japan, Mexico, Canada, and Turkey. A tooling and machining shop is a service industry. We built and developed a special machine recently for an automotive firm. The order was for 20 machines. Hundreds of man-hours went into building this machine -- all of our cost was up front, it is with the second buy that any profit is made. We shipped the machines to the automotive plant in Mexico. The company came out for a second quote, but we were not selected. The machine is now being produced in Mexico. What I'm saying is, they had the machine in front of them and were able to copy it.

In another instance, we again developed a series of dies for an aircraft engine. The first go around to complete this project was very expensive. We designed and built the dies and shipped them overseas to Turkey. We were actively giving away our technology This technology was absorbed and when we quoted another series, we lost.

The most onerous incident occurred with Japan. We were providing stainless steel manifolds for a firm in Texas. We were very pleased with the order as each piece was valued at $500 and at 100 parts we ran it twice. We made the delivery and were hopeful for a second buy. We bid again and lost. I researched the matter because I couldn't believe anyone could beat our price. The buyer indicated they had chosen a Japanese firm. I was incredulous. I asked him how they could make delivery on time. The buyer indicated we lost to a Japanese firm with a machine shop on a ship outside U.S. territorial waters off the coast of Houston!

These are just a few of many examples I could offer you and my experience is not unique. Many other shops are experiencing similar problems with parts going offshore (literally). This leads me into a discussion of offset policy.

OFFSET POLICIES

Many Europeans believe that the post-World War II economic order has changed fundamentally to favor them. They see a world in which economic and even political power is being shared on a trilateral basis among the United States, Japan and Europe.

This attitude lies behind the fierce competition from Europe that American small businesses face. It is an attitude that gives rise to massive European subsidies for business and to restrictive, quasi-protectionist policies of Europe including their infamous offset policies.

Europe may expand the request for offset or trade reciprocity required of U.S. companies seeking to sell into the European market. In other words, the large offsets imposed by the European countries for military sales may be imposed on smaller sales, gradually affecting more and more U.S. companies, including members of our own Association

A brief statement is needed about this issue because offset is a troubling index of the forces we now face as a country for doing business in Europe. Every country in Europe has an offset policy yet America does not have such a policy.

The practice of demanding offset or mandated reciprocity from U.S. companies began with the General Dynamics F-16 sale to a consortium of NATO countries in 1975 and with the Swiss purchase of Northrop s F-5 in the same year. Offset in the first case for the F-16 included mainly a co-production agreement, where a certain percentage of the planes had to be constructed in Europe (the Netherlands) as part of General Dynamics's price for making the sale. Northrop had to commit to export a value of products from Switzerland equivalent to 30% of the $400 million contract. The U S companies had little choice but to comply with the European offset request or lose the sale. This type of policy has now spread to certain other sectors outside the area of defense, such as telecommunications and to countries in Europe such as Spain which had no offset policy before 1980.

Other notable examples of offset included Raytheon's sale of the Patriot missile to West Germany in 1984 and Boeing's sale of the Airborne Warning and Control System (AWACS to Great Britain and France. (Japan was similarly successful in extracting offset agreements from U.S. companies such as in the recent FSX case where technology transfer and co-production agreements were necessary in order to win the sale.)

In my view, U.S. companies have tried very hard to meet these offset requests and should be let alone by the U.S. government to make their best offer; having some sale in this country is better than no sale at all.

However, U.S. companies should not be at the complete mercy of foreign governments set on extracting every ounce of economic advantage out of sale, as if the goal of every European country, or Japan, is to be certain that all or most of the product is produced in the purchasing country and all or most of the key technology to make the product is transferred out of the United States as well.

THE EFFECT OF OFFSET ON SMALL BUSINESS

Why is offset a problem for small business in this country? Prime contractors understandably seek help from their sub-contractors in coming up with ways to comply with a European offset request. Sub-contractors have risen to the occasion by transferring technology overseas or by purchasing components from overseas, all in order to help the prime contractor win the sale.

Considerable pressure is often put on the smaller company to transfer technology or to purchase components from overseas. These actions by smaller companies are often in their best interest. However, let me be very clear. The pressure generated by offset on U S. companies, whether large or small, to purchase components from foreign countries and to manufacture in foreign factories is definitely not good for the U.S. trade deficit.

Offset puts enormous pressure on the largest U.S. companies to purchase components from overseas and to locate their factories overseas. Some business is definitely taken away from small business in the process. True some new sales may go to the smaller U.S. company as sub-contractors but the pressures of each transaction are all in the opposite direction, to direct the flow of purchasing out of the United States.

We need an American offset policy to harness U.S. purchasing clout!

It is essential for U.S. offset policy to be directed at foreign countries with similar policies already in place (Europe, Japan, Canada and Australia), and not at U.S. companies struggling mightily to win export sales. In this treacherous offset environment, the U.S. companies must always be free to make their best deal.

The above countries have been most effective in applying offset in cases where the purchases are made on a government basis. Even though U.S government purchases from overseas are relatively small by comparison with Europe, we could consider taking the first step by requiring offset on these purchases. The Pentagon should consider requiring offset of European companies seeking to gain entry to that lucrative market.

A U.S. OFFSET POLICY SHOULD SAY:

1) Yes, we believe in free trade.

2) Rather than applying more trade barriers with additional tariffs and quotas, we believe that large importers into the United States bear a special responsibility to export more from this country.

3) Imports into the United States above certain levels would be allowed only if the importer achieved an established export level. (Many Third World countries now insist that a sale into a country be balanced exactly with an export. European countries appear to say the same thing when their offset percentage rises to 100%.)

THE INDUSTRIAL BASE

While our members subscribe to free and open competition, these factors have placed unrealistic capital burdens on small owner-operated businesses.

While these factors effect domestic economics, the balance of trade which includes technology, has not been favorable to the U.S. and we feel these factors have combined to cause an erosion of the U.S. industrial base We believe further that our nation needs to "wake-up" and realize that we can no longer "gear up" rapidly to meet emergencies as we did in World War II, and that we can no longer afford the financial burden of mobilization as we have in the past. In addition, we must realize that we are now, in some areas, technologically dependent on other nations to provide parts and components to keep some of our major weapons systems operable.

In June of 1988 the retiring Army Chief of Staff noted that munitions, spare parts, and systems would last only three months in a war scenario, and that it would take nine months for defense production to catch up.

As far back as 1980 the report of the House Armed Services Defense Industrial Base Panel noted that the small contractor and subcontractor base was the weakest link in the industrial base. At the same time, the withdrawal of European short and intermediate range nuclear missiles and ongoing nuclear reduction negotiations make the conventional defense industrial base all the more important to our national security.

Recent history shows that cuts in the defense budget are invariably felt most severely in the area of readiness Major systems will continue in development, while existing systems will lack the spare parts with which to function. The small firms which are nimble and can respond the most quickly in times of national emergency will wither The larger and less nimble prime contractors who are becoming even more dependent on small suppliers, will survive.

If there is a national emergency, there may not be enough of the former to support a mobilization. In the private sector these small firms have already suffered along with their U.S. customers in the automotive, computer, electronics, appliance and other import-impacted sectors.

We believe that the U.S. Defense Industrial Base must be capable of providing necessary manufactured goods for the defense of our country during a war. We support legislation which would require the President, to the maximum extent practicable, to limit sourcing to U.S. providers of parts and components, unless the President determines that domestic firms cannot meet anticipated surge production needs for at least six months.

The Pentagon should take a look at the U.S. industrial base before making procurement decisions. We believe the evidence of past neglect in that regard is so evident that there can be no reasonable argument against such a mandate.

MEMORANDA OF UNDERSTANDINGS

At this point it seems appropriate to discuss briefly another topic which is related and one in which we feel has an impact on our industry and that topic is the Memorandum of Understanding, or MOU. As this distinguished panel is very much aware MOUs are in existence with the NATO countries, Sweden, Switzerland, Australia, Israel and Egypt In effect, the MOU provides a waiver to the Buy American Act. Stated another way, from another perspective, it broadens competition Our concern with this broadening of competition is that it includes those foreign companies who can move easily into the international arena of competition because the subsidy they receive from their respective governments greatly reduces the risk factor from competition.

MOUs are supposed to be based upon national and not economic considerations however, our concern is that this distinction blurs as more and more contracts are lost to foreign firms. If these losses repeatedly occur, there is great fear that the technology will be lost as well as jobs and expertise If such a pattern is allowed to go unchecked, we will soon find ourselves where our weapons systems may depend not only upon foreign produced items, but foreign technology as well.

If this is the case with MOUs, we not only have an erosion of the defense industrial base, but a serious question of national security. When one considers the combined effect of MOUs and the offset policies, small business indeed suffers a "double whammy" in its efforts to penetrate barriers to competition.

It is interesting to speculate what kind of cooperation and support we could expect from our allies if they controlled essential parts needed for our weapons systems -- parts which we no longer had. having given up the capability through loss of contracts because of offsets or MOUs Only three years ago our allies would not even allow us to use their air space in a strike against an international terrorist in Libya. Where will they be if the going gets tough? If their immediate self-interest is not served, it is not difficult to guess the answer.

MOUs are required to be negotiated on a basis of security not economy, yet their existence is invariably defended by an economic justification. Representing over 3,200 small companies who are generally 2nd and 3rd tier subcontractors to large business, we are the first to suffer loss of business when the Buy American Act is waived under a MOU. From our point of view, I submit that MOUs are not economically advantageous nor do they result in favorable national security. If economic conditions are weakened here which results in the loss of subcontracts, the loss of the expertise and technology will soon follow. Our industry suffers, the industrial base is diluted and we are all the weaker.

EUROPEAN COMMUNITY '92

Some of our members have been successful in the European market because of their ability to compete, when the dollar was strong, with know-how and technical superiority. However, most of our members don t even try because they find the market too complicated, the standards too numerous and up-front costs too high.

The development of the European Community '92, offers a tremendous opportunity. It represents a single market with over 300 million consumers, thereby larger than the U S market. It theoretically could offer easier and more free-wheeling competition because of products being designed to world standards as opposed to twelve individual country standards By eliminating individual country tariffs and border regulations and controls, it could make uniform marketing throughout the market possible.

In preparation for 1992, European governments are allowing rationalization of companies to occur. One only has to look to the example of the German Forging Industry where with government encouragement, Krup, Klockner and Theissen have been allowed to form a single new company without the concern for anti-trust that hampers American industry. The crankshaft industry is also undergoing mergers in anticipation of becoming world-class competitive with government assistance.

Small U.S. manufacturing companies are at a severe competitive disadvantage because they are not allowed to join together domestically in consortiums, except under the imperfect form of an export trading company. We have formed an export trading company for our industry.

The European Community bureaucracy is currently funding the development of uniform standards for the European Community market Standards could be a substantial competitive disadvantage. If the International Standards Organization (ISO), which is headquartered in Europe, decides to amend its standards to conform to new European Community standards rather than the European Community agreeing to present world standards, American companies could suffer tremendous competitive disadvantage. Small companies would once again not compete.

RECOMMENDATIONS

1) U.S. should develop an offset policy that is the mirror image of the country involved;

2) U.S. must further restrict use of MOUs in order to prevent transfer of know-how and technology for critical defense parts, software and related technology;

3) DoD should be required to assess the competitive impact of any MOU agreement prior to signing and report same to Congress;

4) Recognizing that considerable defense technology know-how is resident in small companies, Congress should provide tax incentives to allow these companies to compete and stay viable in the international market through the Buy American Act;

5) With countries in which the United States presently has MOUs, and with countries with which the United States may negotiate MOUs, our government should use its influence to prevent that country from imposing offsets against the U.S. manufacturing industry.

SANCTIONED INDUSTRY CONSORTIA

NTMA supports Section 125 of Title VII which provides for "sanctioned industry consortia." This type of arrangement can help alleviate the unrealistic capital burdens on our small, owner-operated businesses.

Our industry now appears to be under intense attack from many corners of the globe -- molds and dies from Japan and Taiwan, molds from Canada and Portugal, and so on. Because we are are such a fragmented industry, dealing in thousands of narrow niches, our companies are highly vulnerable to targeted attacks. And that is what is happening right now. Our companies are being picked off on many narrow fronts simultaneously. These are specialized areas and it is difficult to get an aggregate picture of the magnitude of the assault. But it is a fact and it is happening every day And because our members are each so small they have little to fall back on if their major area of expertise and client base is undermined in such a manner.

What can be done to help this situation? What can be accomplished within the industry to preserve and enhance the skills, technology base innovation, and the competitive position of this industry? We feel that Section 125 is a good start. We feel that the successful application of consortia in small U.S. manufacturing companies is a way to stop the erosion of this vital industrial base. To do nothing is tantamount to being part of the problem.

The concept of sanctioned industry consortia is not brand new, nor is it uniquely American. But it is a concept that has proven to be successful and is growing There has been some limited American experience with the concept during the last 10 years or so, but the most convincing demonstration of its workability is the example in northern Italy and the other parts of Europe. According to Mr. Robert E. Friedman, President of the Corporation for Enterprise Development, the Emilia-Romagna region of Italy, with a little under 4 million inhabitants, has shown an increase in manufacturing employment in the last 15 years (20,000 employees were added to key industries including metalworking and machining). Wage rates went up to 175 percent above the Italian average and the region moved from 17th in per capita income in 1970 to 2nd in 1985 The region contains 325 000 small companies which includes 90 000 small manufacturing firms this equates to one company per every 5 active members of labor force. Ninety percent of the 90,000 manufacturing companies had less than 22 employees. Thirty-nine percent of the total workforce is self-employed. Most of the small highly specialized firms use advanced, computerized equipment with highly skilled workers to produce high quality parts and components which in turn are exported to countries all over Europe, the United States and the Far East.

Metalworking in this particular region of Italy is a great success story but it is not an isolated one Other manufacturing networks have, in turn, sprung up in other regions in Italy and are doing very well. Manufacturing networks have now spread into Germany, Sweden, and Denmark. The conclusion is that this is not simply a temporary phenomenon or a flash in the pan. Each network has grown and prospered in each area (areas which are dissimilar in their political and social institutions which lends credence to the fact that their success is more in keeping with the demands of an ever growing global economy rather than the particular situations which gave rise to each. We need to realize that small manufacturers both here and abroad are entering a new age of international business and competition.

Thus, it is easily seen that from the perspective of small manufacturers, consortia offer enormous possibilities which address significant competitive problems faced by small U.S. manufacturing businesses.

STRENGTHENING ANTITRUST PROTECTIONS

S 1379 amends Section 125 to provide antitrust protections for sanctioned industry consortia. This amendment would allow firms to pool resources to purchase raw materials, collect and share information on production costs, marketing, manufacturing and distribution capacities for purposes of jointly manufacturing products thereby preserving America's competitiveness and encouraging entrance into export markets. At present, small U.S. manufacturing firms are at a severe competitive disadvantage because they are not allowed to join together domestically in consortiums. except under the imperfect form of an export trading company (which we have formed for our membership). Section 125 of S 1379 as written would allow U.S. firms to obtain certification providing protections from antitrust laws. While this provision is a step in the right direction, NTMA proposes an amendment to Section 125 of S.1379. NTMA proposes that this section be amended to include a simplified process for small business i.e. a notification process so that small companies may more readily participate in the sanctioned industry consortia which will permit firms to pool resources and receive antitrust protections authorized under the bill.

Currently, Section 125 proposes a certification process for all companies who wish to join in a consortia in order to receive the limited antitrust protections specified. Applicants would need to go through a lengthy, and likely costly, process before receiving a certificate from the Attorney General and the Chairman of the Federal Trade Commission (FTC), including a 90-day notice in the Federal Register.

Small companies such as the tooling and machining shops which comprise the membership of NTMA, operate on a contract-to-contract basis with short production runs and quick turn-around times. Ours is a customized service industry and a rapid response to a buyer is essential, with submission of quotes normally expected within 30 days, i.e. competition is highly sensitive. Cashflow for a small company fluctuates on a daily basis and there is limited excess capital. The present certification process could require substantial time and resources, and probably the retention of special counsel. Consequently, the certification process is a real deterrent to participation by many small businesses.

A notification process for small companies whose aggregate number of employees is 500 or less (the SBA small business size standard applicable to most types of manufacturing, including metal fabrication), would more readily permit small businesses to benefit from antitrust protection should they wish to join together, usually in a one-time grouping to target a single opportunity or to meet a specific one-time need. It is envisioned that small businesses would provide notification to the Department of Justice and the FTC of their intent to enter into a sanctioned industry consortia and the consortia would be authorized to proceed unless notified to the contrary within 10 working days.

These types of joint ventures are used extensively by our major trading partners such as West Germany, Japan, Sweden and Italy. This concept is of critical importance to small U S. firms and Senator Dixon should be complimented on his recognition of the trend in the last decade toward downsizing of manufacturing facilities. Small firms in high technology fields are greatly restricted by the high cost of capital in their efforts to set up automated flexible manufacturing systems which this amendment addresses. Acting alone, small companies find it difficult to upgrade their production facilities, but allowed to operate jointly, the U.S. can also reap the benefits of these alliances. NTMA strongly supports passage of this amendment.

MANPOWER

The final investment needed is investment in people. Our ability to succeed hinges on our human resources and the training of our workforce.

The tooling and machining industry needs competent technicians with basic knowledge of terms and processes in tooling and machining. The industry requires workers who have mastered basic educational skills in math, science, communication and computers. The industry is suffering from a shortage of skilled workers. We have looked to the vocational education system in this country to provide prepared students. The vocational education system has failed us. Small firms cannot always afford the expense of training workers themselves. There needs to be vast improvements in the public and vocational education systems.

In my own experience, I have lost work because I couldn't find skilled workers. A large aircraft company was expanding production of one if its planes and needed tooling. We won the program. This was a major program, we had the machine capacity but could not fill the skilled positions. All summer we ran the program lacking 20-25 people. The aircraft company called again to offer us another project which I couldn't accept because I didn t have the manpower. I should have 2 shifts running. I could add 50 people to my force and run a second shift. I can't because the people with the skills aren't there. I'm losing business.

Improvements are needed in our public and vocational education systems. The OTA study corroborates this:

> "Not only is our general public education inadequate, our vocational education system falls far short of the standards set by other countries It certainly does not match the apprenticeship training taken by more than half the young people of West Germany."

The problem here is that the nation's labor force in the coming decade has already been through the education system and been failed by it. All we can do now to recoup these dangerous losses in manpower is to devise programs to educate those in the workforce now. The OTA study makes 3 suggestions for an immediate approach to this problem

> "One is to offer federal guaranteed student loans to employed people taking classes part-time; another is to let employers and employees deduct the costs of training and education (the present law already allows this, subject to some limitations). Another possibility is to tailor military training programs, which are already extensive, to fit more closely the skills required of workers in civilian jobs."

The Congress appears to be focusing on increased programs to retrain workers who lose their jobs through foreign competition. That, of course, is critical.

But why wait until workers lose their jobs? In our industry, we see many highly trained and skilled craftsmen who lack the new expertise, particularly with computers, that will be needed in the years ahead. If these workers don't gain such skills, many will lose their jobs in the next few years.

We urge that Congress provide adequate funds for retraining current workers through tuition grants, training tax credits, and other support to gain the skills needed for their future survival in a changing technological work environment.

We also believe that there has been a built-in bias against small business in existing manpower programs. This is largely because of the ability of large corporations with a staff of human resource professionals to participate more actively in these programs to meet their regular on-going needs for large numbers of new employees. We have neither full-time human resource professionals nor ongoing hiring demands for each company. But our industry needs new talent -- serious, motivated people with solid technical skills who can survive the traditional four year apprenticeship needed to master our basic skills, and benefit thereafter from the excellent compensation available for our master craftsmen.

All major manpower programs, such as the JTPA, should contain a requirement that special attention be given to the needs of technology driven small businesses. That would help us satisfy our critical need for new talent. Moreover, a special emphasis is needed for training for high skills occupations or retraining for high skill innovations. The current trends must be stopped.

In summary, reducing the cost of capital, establishing a policy on offsets, broadening the authorities for consortia, and training our workforce will all help to strengthen not only our defense but our commercial industrial base. That concludes my prepared statement and I would be happy to answer any questions you may have. Thank you.

The **Chairman**. I appreciate that. Have you testified before?

Mr. **Dudon**. No.

The **Chairman**. I know this is a little different line of work than when you are out there running a shop in Dayton and doing it successfully for nearly three decades. I know it's a little change of scene to come in here and testify before a committee, but we appreciate your doing it and coming and representing the national association. So we appreciate what you said to us today, and I think it's important testimony.

Dr. Shaw, we very much appreciate what you're doing and we are looking increasingly to the Office of Technology Assessment to really help us structure and formulate national economic strategy here and technology strategy. So we are very interested in what you have to say to us today.

STATEMENT OF ALAN SHAW, INTERNATIONAL SECURITY AND COMMERCE PROGRAM PROJECT DIRECTOR, DEFENSE TECHNOLOGY BASE ASSESSMENT PROJECT, OFFICE OF TECHNOLOGY ASSESSMENT

Mr. **Shaw**. Thank you, Mr. Chairman, and thank you for the opportunity to testify on OTA's work on defense industry and technology.

My remarks today are based on two published reports, one called "The Defense Technology Base: Introduction and Overview" and the other one called "Holding the Edge: Maintaining the Defense Technology Base." I will update this with some of what we have learned along the way since these reports were released.

With your permission, I would ask that, along with the statement that I will summarize verbally here, that the summary of "Holding the Edge" be entered into the record.

The **Chairman**. We will make it part of the record.

Mr. **Shaw**. Thank you. I would also point out that I was asked last week to testify here in place of Walt Laberge, who was the Chairman of our Advisory Panel on that project. I understand he has had some personal problems and couldn't be here today, but he has prepared a statement which he would like to have entered into the record.

The **Chairman**. We will make that a part of the record as well.

HOLDING THE EDGE

Maintaining the Defense Technology Base

SUMMARY

CONGRESS OF THE UNITED STATES OFFICE OF TECHNOLOGY ASSESSMENT

CONTENTS

Page
INTRODUCTION 1
OPTIONS FOR CONGRESS 4
MANAGEMENT OF PROGRAMS AND FACILITIES 12
  Department of Defense Technology Base Programs 12
  Department of Defense Laboratories 15
  Other Approaches 20
GETTING TECHNOLOGY INTO THE FIELD 23
  Technology Insertion 24
  Acquisition 25
  Affordability 28
DUAL-USE INDUSTRIES 28
  Barriers Between Civilian and Military Industry 29
  International Competitiveness and the Health of U.S. Industries 31
  Internationalization of Industries 33
  Formulating Policy 33

Figure

Figure *Page*
1. A Hierarchy of Oversight 14

Foreword

Technological superiority has been a cornerstone of United States security and industry since World War II. That cornerstone is not crumbling, but over the past decade it has weathered significantly. Foreign companies have made deep inroads into high-technology markets that had been more or less the exclusive domain of U.S. industry. In addition to causing economic problems, this has fostered dependence on foreign sources for defense equipment at a time when the technology in defense systems comes increasingly from the civilian sector. At the same time, the Department of Defense reports that Soviet defense technology is catching up with ours, and sophisticated Western military equipment is routinely sold to third world nations.

These trends—and others—have prompted the Senate Committee on Armed Services to ask what needs to be done to maintain the base of high technology on which U.S. national security depends. This report, the second of OTA's assessment "Maintaining the Defense Technology Base," looks into that question in some depth. An earlier report, *The Defense Technology Base: Introduction and Overview* (OTA-ISC-374, March 1988), provided a broad view of the defense technology base and the concerns regarding its health.

This report develops some of the ideas introduced in the first report. It examines the management of DoD technology base programs and laboratories. It also analyzes the process through which technology is introduced into defense systems, in order to understand why it takes so long and what might be done to speed the process up. Finally, this report examines the exploitation of civilian commercial sector technology for defense needs. It concentrates on the dual questions of expediting military access to civilian technology and keeping the necessary base of technology alive and well in the United States. Volume 2 of this report contains extensive appendices and will be published in the summer of 1989.

The help and cooperation of the Army, Navy, Air Force, the Office of the Secretary of Defense, the Department of Energy, NASA, and the National Institute of Standards and Technology are gratefully acknowledged.

John H Gibbons

JOHN H. GIBBONS
Director

Defense Technology Base Advisory Panel

Walter B. Laberge, *Chair*
Vice President of Corporate Development
Lockheed Corp.

Michael R. Bonsignore
President
Honeywell International

William Carey
Consultant to the President
Carnegie Corp. of New York

Thomas E. Cooper
Vice President
Aerospace Technology
General Electric

John Deutch
Provost
Massachusetts Institute of Technology

Robert Fossum
Dean
School of Engineering and Applied Sciences
Southern Methodist University

Jacques Gansler
Senior Vice President
The Analytic Sciences Corp.

B.R. Inman
Admiral, USN (retired)
Chairman and Chief Executive Officer
Westmark Systems, Inc.

Paul Kaminski
President
H&Q Technology Partners, Inc.

Lawrence Korb
Director
The Center for Public Policy
Brookings Institution

George Kozmetsky
Executive Associate—Economic Affairs
University of Texas System
University of Texas, Austin

Ray L. Leadabrand
President
Leadabrand & Assoc.

Jan Lodal
President
INTELUS

Edward C. Meyer
General, USA (retired)

Robert R. Monroe
Vice Admiral, USN (retired)
Senior Vice President & Manager, Defense & Space
Bechtel National, Inc.

William J. Perry (ex officio)
Managing Partner
H&Q Technology Partners, Inc.

Richard Pew
Principal Scientist
BBN Laboratories, Inc.

Herman Postma
Senior Vice President
Martin Marietta Energy Systems, Inc.

Judith Reppy
Associate Director
Cornell Peace Studies Program

Richard Samuels
Professor
Department of Political Science
Massachusetts Institute of Technology

John P. Shebell
Manager, RAMP Engineering
Customer Service Systems Engineering
Digital Equipment Corp.

Michael Thompson
Executive Director
Integrated Circuit Design Division
AT&T Bell Laboratories

S.L. Zeiberg
Vice President Technical Operations
Martin Marietta Electronics and Missiles Group

NOTE: OTA appreciates and is grateful for the valuable assistance and thoughtful critiques provided by the advisory panel members. The panel does not, however, necessarily approve, disapprove, or endorse this report. OTA assumes full responsibility for the report and the accuracy of its contents.

OTA Project Staff—Defense Technology Base

Lionel S. Johns, *Assistant Director, OTA*
Energy, Materials, and International Security Division

Peter Sharfman, *International Security and Commerce Program Manager* (through February 1989)

Alan Shaw, *International Security and Commerce Program Manager* (from March 1989)

Alan Shaw, *Project Director*

William W. Keller

Gerald L. Epstein

Laurie Evans Gavrin[1]

Christine Condon[2]

Congressional Research Service Contributor

Michael E. Davey

Administrative Staff

Jannie Horne (through November 1988)

Cecile Parker

Jackie Robinson

Louise Staley

Contractors

P. Robert Calaway

Arnold Levine

MIT/Japan Science and Technology Program

---

[1] On assignment from OTA's Energy and Materials Program.
[2] On assignment from the Department of Defense.

Workshop on the Relationship Between Military & Civilian Fiber Optics

John R. Whinnery, *Chair*
University Professor Emeritus
Department of Electrical Engineering and Computer Sciences
University of California, Berkeley

James H. Davis
Director, Fiber Optics Program Office
Naval Sea Systems Command

Brian Hendrickson
Chief
Electro-Optics Technology Branch
U.S. Air Force

Raymond E. Jaeger
President and CEO
SpecTran Corp.

Donald B. Keck
Director
Applied Physics Research & Development Laboratories
Corning Glass Works

Tingye Li
Department Head
Light Wave Systems Research Department
AT&T Bell Laboratories

John W. Lyons
Director
National Engineering Laboratory
National Institute of Standards and Technology

Alan McAdams
Professor
Johnson Graduate School of Management
Cornell University

William C. McCorkle
Technical Director
U.S. Army Missile Command—Redstone Arsenal

Kenneth Nill
Executive Vice President
Lasertron

Paul Polishuk
President and Chairman
Information Gatekeepers Group of Companies

Jan H. Suwinski
Senior Vice President and General Manager
Telecommunications
Corning Glass Works

Robert W. Tarwater
Light Guide Fiber & Cable Manager
AT&T Network Systems

Workshop on the Relationship Between Military & Civilian Software

Larry E. Druffel, *Chair*
Director
Software Engineering Institute
Carnegie-Mellon University

Victor R. Basili
Professor
Department of Computer Sciences
University of Maryland, College Park

Barry Boehm
Chief Scientist
TRW, Inc.

Elaine Bond
Senior Vice President
The Chase Manhattan Bank

Mike Devlin
Executive Vice President
Rational

Jeffrey M. Heller
Senior Vice President
Electronic Data Systems

Dana P. Lajoie
Technical Director
Government Systems Group
Digital Equipment Corp.

John A. Lytle
Director of Technical Development
Planning Research Corp.

Allan L. Scherr
Vice President, Development & Integration
Applications Systems Division
IBM

Mike Weidemer
Deputy Director
Mission Critical Computer Engineering
Air Force Systems Command

David M. Weiss
Principal Member—Technical Staff
Software Productivity Consortium

Workshop on the Relationship Between Military & Civilian PMCs

Dick J. Wilkins, *Chair*
Director
Center for Composite Materials
University of Delaware, Newark

Ric Abbott
Principal Engineer
Advanced Composites Project
Beech Aircraft Corp.

James N. Burns
Vice President of Marketing
Hercules, Inc.

Samuel J. Dastin
Director, Advanced Materials
Grumman Aircraft Systems

Bernard M. Halpin, Jr.
Manager, Composites Development Branch
Materials Technology Laboratory
U.S. Army Laboratory Command

James J. Kelly
Program Area Manager
Materials
Office of Naval Technology

Robert Manildi
Manager, Advanced Composites
Hexcel Corp.

Michael J. Michno
Director of Technology
Advanced Composites
Amoco
Performance Products

Alan G. Miller
Unit Chief, Chemical Technology
Boeing Commercial Aircraft

Thomas F. O'Brien
Segment Manager
Advanced Composites Division
Dupont Co.

Frances Rensvold
Physical Science Administrator
Aero Mechanics Technology, Andrews Air Force Base

Douglas C. Ruhmann
Chief Design Engineer
Manager, Materials & Processes
McDonnell Douglas Astronautics Co.

Nick Spenser
Sales Manager
Composites Materials
CIBA-GEIGY

NOTE: OTA appreciates and is grateful for the valuable assistance and thoughtful critiques provided by the participants in the workshops. The workshop participants do not, however, necessarily approve, disapprove, or endorse this report. OTA assumes full responsibility for the report and the accuracy of its contents.

Summary

INTRODUCTION

Not long ago, the United States was the undisputed technological leader of the world. U.S. military equipment was meaningfully and undeniably more sophisticated than that of the Soviet Union, and our allies sought American technology for their own defense efforts. American companies developed and sold high-technology products to a world that could not produce them competitively. Defense-related developments led American technology and often "spun-off" into the civilian sector, creating products and whole industries. This reinforced a U.S. defense posture based on using technological superiority to offset whatever advantages the Soviet Union and other potential adversaries might have.

As we approach the 21st century, much has changed. The model of U.S. technology leading the world, with defense technology leading the United States, still retains some validity. But it is a diminishingly accurate image of reality. Soviet defense technology increasingly approaches our own, and sophisticated weapons appear in the hands of third world nations not long after their introduction into Western and Soviet arsenals. At the same time, the U.S. military has been plagued with complex systems that do not work as expected, work only after expensive fixes, or simply do not work. Most are high-priced and take a long time to develop. Increasingly, leading edge technology comes from an internationalized, civilian-oriented economy, which puts a premium on exploiting technology as well as developing it.

As a result, the Nation faces a complex set of interrelated problems that bear on its ability to continue to develop and manufacture in sufficient quantity the technologically advanced materiel on which we base our national security posture. There are specific concerns about: 1) the continued ability of the Department of Defense (DoD) and its contractors to develop the technologies it needs; 2) the ability of DoD and the defense industries to turn these technologies into useful, affordable products in a timely fashion; and 3) the ability of DoD to exploit the technology that is being developed worldwide in the private civil sector.

Concern over the availability of the latest technology for defense applications, and the ability of U.S. industry to engineer and produce equipment based on that technology rapidly and affordably, led the Senate Armed Services Committee to request that OTA undertake an assessment of the defense technology base. This is a summary of the second report of that assessment. The previous report, *The Defense Technology Base: Introduction and Overview*,[1] described what the defense technology base is and presented the major problems facing the Nation. This report looks in depth into some of the issues raised in the previous report. It identifies strengths and weaknesses of the U.S. defense technology base and analyzes options for enhancing the strengths and remedying the weaknesses.

This summary is divided into five sections. The first section is an introduction to the topic. The second section outlines options for Congress. The third addresses the strategic management of DoD technology base programs. It examines the system by which the goals of the technology base programs are identified as well as the methods used to allocate resources in order to reach those goals. The emphasis there is on the role played by the Office of the Secretary of Defense (OSD) in guiding and coordinating the efforts of the Army, Navy, Air Force, and other DoD elements. The third section also addresses the management of the laboratories run by the three Services. The fourth section analyzes delays in getting technology into the field. The final section is concerned with "dual use" technology, i.e., technology used in both the civilian and defense sectors.

---

[1] U.S. Congress, Office of Technology Assessment, *The Defense Technology Base: Introduction and Overview—A Special Report*, OTA-ISC-374 (Washington, DC: U.S. Government Printing Office, March 1988).

A large part of the technology that ultimately winds up in weapons and other defense systems is either developed or directly sponsored by DoD. This is particularly true of technology that is altogether new, makes a major difference in the performance of defense equipment, and is of little interest to commercial industry. How DoD runs its technology base programs is therefore of major importance. In recent years DoD has spent roughly $9 billion per year on its technology base programs: research (budget category 6.1), exploratory development (6.2), and advanced technology demonstration (6.3A). Roughly 40 percent of this is spent by the three Service departments (Army, Navy, and Air Force). Another 14 percent is controlled by the Defense Advanced Research Projects Agency (DARPA, formerly ARPA). Another 39 percent finances the Strategic Defense Initiative Organization (SDIO).[2] Although all of SDIO's funds are allocated in the 6.3A budget category, according to SDIO only about 15 to 20 percent is actually spent on technology base activities.

The three Services run their technology base programs and their R&D institutions differently.[3] Some of this is the result of recent planning, while much of it results from organizational "cultures" developed over many years. The Army's effort emphasizes decentralization. The Army runs some relatively small research laboratories which focus on selected topics, while larger research, development, and engineering centers are closely tied to "buying commands."[4] The Navy stresses in-house research and development both in the Naval Research Laboratory, a broad-based corporate lab that serves and underpins the Navy's entire technology effort, and in full-spectrum research and development (R&D) centers that nurture ideas from basic research through preproduction stages. These centers have traditional ties to the equipment needs of various functional parts of the operational Navy, but are not formally tied to specific buying commands. The Air Force, which contracts out more of its R&D effort than either of the other Services, centralizes its efforts within the Air Force Systems Command. Its technology base programs are seen as a link between buying commands (the divisions of Systems Command) and the defense industry. The basic theme is to buy technology and make sure it gets to industry. The Air Force has recently adopted the position that technology base programs should be a "corporate investment" funded at some fixed fraction of the budget. The Air Force puts a greater emphasis on R&D-related career paths than do the other Services.

With such diversity (including that added by DARPA, the other defense agencies and SDIO), if the program is to have overall planning and coordination—and not everyone agrees that it should—leadership almost has to come from the Office of the Secretary of Defense.

Actual R&D is performed primarily by industry, universities, and the laboratories run by the Services.[5] In most cases laboratory is a misnomer, although a convenient shorthand. These latter institutions, as a group, perform technology base work in addition to advanced and even full-scale development. They also provide other functions to DoD. Their efforts are generally divided among performing in-house work, contracting out work (and monitoring contractors' efforts), and providing technical advice to program managers and buying commands (a function often referred to as being "smart buyers"). It is very difficult to describe a typical DoD lab because they differ in size, in the mix of these functions, and in a number of other basic elements. However, what they all have in common is that they are owned and run by the government, staffed by government employees, and subject to a large number of laws and regulations. There has been a continuing and, in recent years, rising concern that they are inefficient, ineffective, self-serving and duplicative of industry work, and increasingly hampered in doing their jobs by the conditions of being part of the government.

---

[2] Other defense agencies account for approximately 7 percent of DoD technology base program funding. (See footnote 1, p. 19 of this report.)

[3] All three, however, orient their programs heavily toward current product areas. Nontraditional ideas do not fit well into the system.

[4] A buying command is one of a number of organizations within the Armed Services responsible for developing and buying military equipment and systems.

[5] Work is also done by other government laboratories (e.g., the Department of Energy national labs and NASA labs) and various private profit-making and non-profit organizations.

DoD has some important unique characteristics, but it is not the only large organization that relies heavily on new technology nor the only establishment that runs R&D programs and facilities. Large corporations and the governments of other nations do the same. Their specific goals may not be the same: DoD buys defense equipment to meet a threat, corporations seek to develop and market products in a competitive market, and other nations seek to enhance their economic positions as well as their security. But all share the general goal of marshalling technology assets to achieve some purpose. To some extent, these other entities provide some of the background against which DoD must plan and execute its programs (certainly the evolution of the threat is another). But they also provide potential models of management techniques that might be useful to DoD in solving its management problems.

The technology base programs and laboratories produce technology, but that technology is of no use unless it makes its way into fielded systems that the military can use. There is great concern that it simply takes too long to get new technology into the field. Systems take upwards of 10 years to develop and produce, and when they finally become operational, they often embody technology that is viewed as obsolete, either because better technology exists in the labs or in industry, or because consumers can purchase better technology at their neighborhood stores. In the previous report, OTA found that delays are not a technology base problem: they occur after the technology is developed. However, delays are a major obstacle to keeping our technological lead in fielded equipment.

While a majority of the most visible technology in defense systems comes from DoD and companies that contract with it, a significant part comes from the "nondefense" sector. Mundane technology—like bolts—has often come from industries that sell to both military and civilian customers. And at the subcomponent level, much also comes from the civilian side. Increasingly, these "dual-use industries" are sources of advanced technology, sources from which DoD should be able to draw (and in some cases must draw, because the technology is ahead of what the defense world is building). Increasingly, leading-edge technology is developed in the civilian sector and then finds its way into defense applications. But government rules that make doing business with the government different from selling in the commercial sector create significant barriers to companies moving into government work. Some of these companies are heavily involved in defense work, while others now do little or no business in the defense sector. Moreover, dual-use industries are becoming increasingly internationalized, raising issues of the competitiveness of U.S. firms in the world market and dependence on foreign suppliers in defense procurement.

DoD has become less able to drive the direction of technology. While some areas are pursued primarily for defense applications, others are molded by the consumer market. Large commercial markets generate enormous amounts of capital that fuel research and development. That R&D is primarily directed toward applications and products with large potential commercial payoffs. The relatively small amount of business represented by sales for defense applications is in many cases not significant enough to swing the direction of development. There are still many important areas of development that are primarily, or exclusively, defense-oriented. But the pattern of technology originating in the defense sector and "spinning off" into the commercial sector is being replaced by parallel development and, to use the Japanese term, "spin on" of commercial technology to military applications. Faced with this situation, DoD can buy cutting-edge technology developed in the civilian sector, or it can spend large amounts of money to keep a comparable leading edge resident in-house or with defense contractors.

As a consequence, DoD finds itself (or its contractors) having to buy from companies that do not need its business. Large aerospace companies have to play by DoD's rules: defense is their only business, or at least an overwhelming component of their business. But small, leading-edge technology companies can make much more money in the private sector without the trouble of playing by government rules. They can opt out of doing defense work.

This assessment examines dual-use industries through the mechanism of case studies, concentrating on three industries: advanced composites, fiber optics, and software. These present different perspectives. The advanced composites industry is heavily involved in defense business, but U.S. companies may see their commercial base erode as international competition heats up. Moreover, many of the major companies are international or integrated with foreign firms. U.S. fiber optics producers now sell very little for defense applications. But DoD has important uses for their products. Government buying practices form major barriers to these companies doing business in the defense market, and they are beginning to face stiff competition in the civilian market from foreign competitors. Finally, the software industry is one that straddles both worlds, and moves very rapidly. Software is at the heart of most new defense systems, particularly command, control, communications, and battle management systems.

All of these topics have been the subject of numerous studies, which have produced conflicting conclusions. This report pulls together much of that work, along with original research and analysis. Moreover, while DoD management and industrial/trade issues have been the subject of legislation and proposed legislation, the problems are not yet solved. The next section discusses the major issues before Congress.

OPTIONS FOR CONGRESS

The U.S. defense effort rests on a strong, broad, dynamic base of research and development. Government and private institutions, and civil and military establishments all contribute. But this defense technology base is also characterized by:

- a heavy burden of government rules, regulations, safeguards, and procedures that stifle the ability of DoD to develop and exploit technology;
- the lack of an effective system for high-level planning and coordination; and
- the lack of a clear government policy and coherent strategy for dealing effectively with dynamic trends in the international high-technology economy.

To those who have followed defense industry, technology, and procurement, none of this will come as a surprise. These problems—and more—have been noted and studied for at least three decades. But despite repeated attempts to fix it, the system has remained resistant to major improvements. Indeed, the major problems have continued to worsen, although probably more slowly than if no measures had been taken.

The U.S. is not faced with a defense technology base that is in deep crisis. The Services and other defense activities fund a great diversity of research and development, run a large number of laboratories that do credible—and often outstanding—work, and successfully exploit that technology and technology developed elsewhere. But the process has a number of serious shortcomings that may be amenable to significant improvement. Moreover, important recent trends threaten to intensify these shortcomings and magnify their importance. U.S. leadership in high-technology industries that are vital to defense is eroding in the face of strong international competition. Budget restrictions predicted both by Congress and by the Administration will reduce funding for technology base activities at a time when the costs of research and development are increasing. And DoD's ability to compete successfully for key technical and managerial personnel is declining.

On top of all this, a heavy burden of rules and regulations impedes the development and exploitation of technology and the successful transition of developments into fielded systems. The accumulated actions of past Congresses are a major contributor to the difficulties. Laws passed for a variety of good reasons, taken together, bog the system down. Lack of clear policy on the part of both Congress and the executive branch impedes the solving of important problems.

Virtually all the easy solutions have been tried. It is unlikely that any fruitful but painless approaches remain. Congress and the executive branch will have to face some hard choices. These include altering institutional arrangements that—despite their deficiencies—have become comfortable, and sacrificing existing goals in order to achieve more efficient development and exploitation of technology.

Based on the analysis in this report, OTA has identified seven basic issues that profoundly affect the welfare of the defense technology base. These are not specific action items, but rather broad agenda items that warrant congressional attention. For each of these there are many different choices as to what individual policy directions to take, and within those, a myriad of measures (and choices among measures) for implementation. Implementation is clearly important, for without any sense of how to implement a policy, it remains simply an abstraction. There are options that can be implemented only through legislation, because today the law forbids them or provides no way to make them happen. And there are options that can be implemented without changing the law—through executive action or changes in DoD's internal regulations. Congress can have a hand in effecting these sorts of changes by making its wishes known or by using its considerable powers of persuasion.

ISSUE 1: Reforming the Defense Acquisition System

The defense acquisition system is a major contributor to the long delays in getting new technology into the field and erects formidable barriers to exploiting technology developed in the civilian sector. While Congress did not intend the system to be slow, cumbersome, and inefficient, laws passed to foster goals other than efficient procurement have made it so.

The system has weathered many attempts at reform because its problems are rooted in several basic causes. It is dictated in part by our basic system of government which demands checks and balances on the expenditures of large amounts of public funds, provides for a tug and pull between the interests of the executive branch and those of Congress, and permits both branches to reevaluate programs yearly in light of changing factors and interests. But much of the problem can be traced to laws that Congress has enacted to curb abuses and to foster goals other than efficient procurement of defense equipment. Laws and regulations have been added to ensure:

- civilian control over military procurement,
- Administration control over Service activities,

- congressional control,
- protection of congressional constituent interests,
- environmental protection,
- fairness,
- competition,
- accountability,
- honesty,
- controllable business practices,
- minority interests,
- small business interests,
- protection against conflicts of interest, and
- prevention of large profits at taxpayer expense.

These many ends often conflict with each other and with the objective of quick and efficient procurement, which leads to compromises that can satisfy few, if any, completely. Thus, the consequences of achieving these other objectives have included high costs, long procurement times, inefficient production, and restricted access to technology.

To promote these and other goals, the government has developed business practices and criteria that differ markedly from those of the civilian market. Buyer and seller have an adversary relationship; accountability is stressed over efficiency and price; and the government insists on visibility into how its contractors conduct their business. Government imposes restrictions on profits, trade secrets, and accounting procedures that are at variance with typical commercial practices. This discourages many innovative companies from seeking defense business.

History provides little hope that a few clever, relatively painless moves will be sufficient to make the system significantly more efficient while satisfying other goals. **If Congress is serious about making the system work better, it will have to face some hard choices.** One choice is to give efficient procurement greater emphasis over other goals. This would most likely mean that the system would become less fair, less competitive, less accountable, less responsive to minority and small business interests, etc. Another option would be for Congress to give up some of the power it has over major defense programs, or to curtail sharply some of the many centers of power within the executive branch. This would not necessarily make any particular program run better—two layers of management could be just as ineffective as 20—but it would remove major impediments. Instituting multi-year budgeting, which could also make programs run more quickly and smoothly, would likewise require both Congress and the executive branch to give up some power. Finally, Congress could loosen up the rules under which DoD conducts business, allowing business practices to move closer to those of the private sector. But inherent differences between government and private operations will always remain. For example, the government is accountable for the expenditure of public funds and is very sensitive to allegations of misuse. Where a business would be willing to absorb some pilfering if it were exceeded by the cost of prevention, the government is usually willing to spend whatever is necessary to prevent fraud.

Few such moves would come for free. For example, relaxing accountability rules could make it easier for companies to cheat the government. It may well be that, weighing all these factors together, Congress will decide that the current balance among all these interests is proper, and that inefficient defense procurement is an acceptable cost. While concerns for efficient procurement will push in the direction of loosening up the system, a need to respond to a recent history of procurement scandals, failed programs, and high-cost low-quality equipment will likely push in the opposite direction.

ISSUE 2: Independent Research and Development (IR&D) Recovery

Current law permits companies having contracts with DoD to bill to the government, as a cost of doing business, part of the cost of their internally generated R&D program. Industry generally believes that current rates of recovery are inadequate. Some think recovery rates are too high. DoD cannot seem to present a coherent position. IR&D recovery is not treated in this assessment, but it is very likely to be on the congressional agenda. Interested readers are referred to OTA's previous report *The Defense Technology Base: Introduction and Overview.*[6]

ISSUE 3: Reforming the DoD Laboratory System

As a whole, the DoD laboratory system performs its function of supporting defense procurement. As a group, laboratory managers are capable and experienced and provide much of the corporate memory for technology base activities. But the system is vast, complicated, and uneven in performance. The structure of the system as a whole—the number, types, sizes, orientations, and institutional connections of the labs—may be restricting their utility and effectiveness. Moreover, the management system under which these government owned and operated facilities are run is rendering it increasingly difficult for them to function effectively. A long list of rules impedes their daily operations and makes them increasingly unable to compete for highly qualified scientists and engineers. In general, Congress can choose to:

- reform the system itself,
- order DoD to reform it according to congressional guidelines, or
- leave the job to DoD.

Whatever course Congress chooses, it is unlikely that the correct approach will be either simple or obvious.

There are three basic approaches to reforming lab management. The least disruptive would be to alter, within the current civil service system, the rules under which they operate. This could include:

- extending the principal features of the NOSC/China Lake personnel experiment to other labs,
- permitting the labs expedited procurement procedures for scientific equipment and services, and
- providing multi-year funding.

Alternatively, Congress could decide that R&D is inherently different from other government activities, and that the labs should be allowed to operate differently from the rest of DoD. This might include permitting salaries for scientists and engineers to rise above current civil service ceilings and allowing the labs to build and modernize facilities by going outside the military construction process. The most radical approach would be to convert some or all of these facilities to government-owned, contractor-operated (GOCO) facilities, like the Energy Department National Laboratories. Conversion to GOCO could solve some of these problems, but would be no panacea.

Congress should also seriously consider altering the overall structure of the laboratory system. This could include closing some labs, consolidating others, shifting the internal make-up and missions of some, and creating new ones. Corporate research labs, like the Naval Research Laboratory, might be established for all the Services; or the in-house capabilities of many labs could be greatly improved. In the process, the system should get simpler, not more complicated. Greater integration of DoD labs with other government labs—reform of the overall government lab system—might also be considered. This could include forming research centers to spearhead major thrusts into areas of particular significance for both defense and commercial needs. These would be drastic steps requiring careful, detailed study and assessment of the individual labs before implementation. If done correctly, they could lead to greatly improved benefits from DoD R&D expenditures. If done carelessly, they could be counterproductive. At the heart of the process would be devising a system for evaluating the performance of the laboratories and their component parts. This ought to include the quality of work as well as its relevance to both identified Service needs and potential future advances.

---

[6] Released March 1988, report No. OTA-ISC-374. Available from the U.S. Government Printing Office, Washington, DC.

Restructuring the lab system may be a necessary response to budget pressures that reduce funds available to run them. Significant reductions could be accommodated by reducing all efforts proportionately, but this would reduce good work as well as bad. Other approaches are closing the least productive and useful labs or effecting a more extreme restructuring of the entire system to maximize performance and utility at a lower overall level of effort.

ISSUE 4: Reforming Strategic Planning of Research and Development Programs

Unlike many governments and large corporations, the Department of Defense does not have a central headquarters-level system for planning and coordinating its technology base programs. Planning is carried out by the Services, the defense agencies, and SDIO; coordination among similar projects is done at the laboratory level. This lack of central focus is repeated both higher up the chain—at the overall national level—and within the individual Services.[7] This is not necessarily bad. If centralization stifles unplanned innovation and healthy competition, fails to support Service needs, or results in decisionmaking by the uninformed, then it is counterproductive. However, lack of overall planning can lead to wasteful duplication of efforts, lack of critical mass to solve common problems, fractionated efforts, and inattention to areas that are on no component organization's agenda. It also risks failing to identify areas of common or overarching significance. If there is to be strategic planning and central coordination, it will have to be done by the Office of the Secretary of Defense (OSD). Congress should decide whether—as many DoD studies have advocated—OSD ought to be given greater power (or encouraged to exercise the power the law already gives it) to plan, coordinate, and oversee technology base programs; or whether Service dominance should be supported and reinforced. More forcefully, Congress could order OSD to develop a strategic planning process to lead to a coordinated, department-wide technology base investment strategy.

As currently organized, OSD oversees Service technology base programs at one organizational level, DARPA at a second, and SDIO only at the highest level. This inhibits real coordination. Moreover, it leads to the lack of a high-level advocate within OSD exclusively for technology base programs, lowering the status of technology base programs within both DoD and Congress.

Strategic planning and program coordination are different from central management. The former refers to a strategic OSD planning function providing the ability to orchestrate the entire program. OSD could perform this planning role from a broad perspective over all the technology base activities that the individual Services do not have, but it would lack the detailed information and insight into the workings of specific programs necessary to manage them effectively. Planning and coordinating programs and then letting the extensive Service R&D organizations manage them is different from aggregating similar programs and managing them from OSD.

Congress could also define more clearly what its own role is. It seems unlikely that Congress can provide direction to the thousands of individual projects. Congress could actively involve itself in the strategic planning process or confine its activities to demanding that OSD produce and defend a strategic R&D plan.

---

[7] The Services seem to exercise more influence over their components than OSD does over the Services.

ISSUE 5: Reforming Government Personnel Practices

Recruiting and retaining qualified scientists and engineers is a major problem for DoD laboratories. In the current sellers' market, government salaries and benefits for technically trained personnel are not generally competitive with either industry or universities. Many DoD labs have given up trying to recruit the best and the brightest. Loosening up the rigid civil service salary structure is a principal component of ideas to reform lab management, and being able to pay competitively—above civil service ceilings—is a major incentive for converting labs to GOCO status. Federal pay raises, if they are enacted and applied in any significant way to scientists and engineers, could substantially help the situation; alternatively, Congress could consider a separate pay scale for scientists and engineers more in line with industry and academia. This may not be a permanent problem, since the market for scientists and engineers tends to be cyclic. But until such time as it turns around, defense technology base efforts are being hurt by a system that cannot adjust to the market. It is also possible that this time the market will not turn around, that the current expansion in high-technology industry—coupled with demographic trends—will keep the supply short for a long time to come. Congress may also want to consider efforts to increase the number of students in technical disciplines. Defense efforts are particularly hard hit by shortages because they mostly require U.S. citizens and can take little advantage of the large number of foreign graduate students in U.S. universities.[8]

Some observers see similar problems in attracting good managers of acquisition and technology base programs. People with the requisite skills and knowledge can command greater salaries in industry, and are reluctant to work for DoD. "Revolving door" rules are also a disincentive to government service. Congress may wish to consider reviewing salary levels. It may also be worthwhile for Congress to gain deeper insights into the inhibitory effects of other employment restrictions and reconsider them in this light.

ISSUE 6: Fostering Greater Coordination Between Defense and Civil Research and Development

National defense benefits from a vibrant civilian technology base. Civilian research provides another large source of technology that finds its way into defense systems, and effective civilian R&D underpins a strong economy that provides greater revenues for defense efforts. The ability of the military to achieve and maintain leading-edge technology will, in many cases, depend on the health of corresponding civilian industries. In a very general sense, economic security is a major component of national security; the ability of the United States to compete economically is intertwined with its ability to compete militarily.

The U.S. defense and civil sectors are not isolated from each other, but they are far from closely coupled. Two relatively separate sectors have evolved—one military and the other commercial. The diffusion of civilian technology into defense systems is hampered, as is the availability for commercial purposes of technology developed in the military sector. Some of this is unavoidable: security often demands that some technology be kept under wraps. But much is the result of government business rules that erect barriers to commercial companies selling to DoD and of a weak, high-level technology policy apparatus.

---

[8] The question of potential shortfalls in the future supply of scientists and engineers is addressed in U.S. Congress, Office of Technology Assessment, *Educating Scientists and Engineers: Grade School to Grad School*, OTA-SET-377 (Washington, DC: U.S. Government Printing Office, June 1988); and U.S. Congress, Office of Technology Assessment, *Higher Education for Scientists and Engineers—Background Paper*, OTA-BP-SET-52 (Washington, DC: U.S. Government Printing Office, March 1989).

Other industrialized nations—particularly in Western Europe and Japan—construct their technology efforts with a greater emphasis on economic development over military development than does the United States. They are increasingly demanding that military technology support commercial development whenever possible. In Japan, almost all technology is developed for commercial purposes, and some of it is then exploited for military uses. What is appropriate for these other nations is not necessarily good for the United States, since neither Japan nor any Western European nation aspires to be a superpower. However, these are the nations with which the United States is competing economically. We may be able to benefit from making both military and civilian R&D do double duty.

There are several things Congress could do to foster greater symbiosis of civil and military technology. Steps could be taken to expand the availability for commercial exploitation of the vast amount of R&D done in DoD laboratories and under contract to DoD. Tying the Defense laboratories more closely to those of other agencies—for example by fostering exchanges of personnel or forming major research centers for dual-use technology—could benefit both military and civilian developments. Both the development of technology and its transition into engineering could be helped by movement of technical personnel between government and industry.

The acquisition system could be reformed to make it easier for DoD to do business with innovative companies in the commercial high-technology industries. Government regulations on profits, data rights, and accounting procedures all discourage these companies from seeking defense business.

Congress may find it worthwhile to reconsider current mechanisms for setting technology policies at the highest levels of government. In particular, it may wish to provide for a high-level organization that would oversee and coordinate major government-sponsored R&D programs.

ISSUE 7: Dealing With International Trends in High-Technology Industry

The United States is failing to maintain a competitive commercial base for some technologies that are important for defense procurement. Long standing industrial and trade policies may have to be reformed if the United States is to maintain the industrial capacity necessary to support essential dual-use technologies.

Both Congress and DoD have been concerned about the movement of high-technology industries offshore. This has spawned several responses, including attempts to legislate that DoD buy almost exclusively from domestic suppliers. This approach would probably minimize foreign content in U.S. defense systems, but it attacks the symptom rather than the cause. It would have little effect on the ability of U.S. companies to compete effectively in the international marketplace—a key to having healthy, leading-edge companies here for DoD to buy from.

Having dual-use companies in the United States and available to DoD requires that they be sufficiently competitive on the world market to stay in business. Defense business alone is not usually big enough to keep them afloat. And creating captive companies that exist only on assured DoD business will almost certainly guarantee that technology falls behind the state of the art. Furthermore, cutting ourselves off from foreign technology will mean depriving our defense efforts of important technology that is not available here but possibly is available to the Soviets on the open market.

The United States will have to deal with two fundamental phenomena. First, high technology is a worldwide enterprise. The United States no longer has a monopoly on it. We can change our position relative to the rest of the world, but it is extremely unlikely that we will regain the dominant position the United States once enjoyed. Second, individual companies and entire industries are becoming internationalized. It is becoming increasingly difficult (if not impossible) to define what an American company is. Plants in the United States are owned by foreign nationals or foreign-based corporations. And U.S. companies open plants in other nations. Moreover, international partnerships lead to foreign interests in U.S. ventures and partial U.S. ownership of foreign factories. Protecting U.S. interests and ensuring U.S. sources of supply are therefore not simple matters. This is complicated by the measures that other nations take to protect their companies and their home markets.

The United States has yet to begin to formulate a policy to deal with this situation, both with regard to defense procurement and as it relates to the future of the U.S. economy as a whole. Congress will be faced with decisions on how dependent on foreign sources DoD can be, which high-technology industries must be kept viable in the United States, how to maintain those industries, and how to protect U.S. defense needs as companies become internationalized. Congress will have to formulate policy with regard to foreign ownership of U.S. plants and foreign siting of U.S.-owned facilities—or encourage the Administration to do so.

The solution is almost certain to be found among the choices that lie between the two extremes of buying defense components only from U.S.-based and owned suppliers, and buying solely on the basis of getting the best deal. The former is likely to be incompatible with staying on the leading edge of technology, and the latter may well reduce the U.S. base of technology and manufacturing to a level that is insufficient in time of crisis if not in peacetime. These intermediate choices include buying from:

- U.S.-based foreign-owned companies,
- U.S.-owned companies regardless of location, and
- nearby sources (i.e., Canada or Mexico) regardless of ownership.

In formulating policy, the Nation will have to decide how important foreign ownership is and to what degree domestic siting of development and manufacture is necessary. That policy will have to take into account factors such as: international patterns of trade, manufacturing, and corporate ownership; the costs and opportunities of maintaining domestic capabilities; existing relations with other nations; and the effects of policy choices on foreign relations. It is one thing to be interdependent with an allied nation, and quite another, as the oil shocks of the 1970s demonstrated, to be dependent on just any nation. Every nation ultimately presents a different case, but the spectrum ranges from Canada—which is adjacent, a NATO ally, and defined as part of the North American industrial base—through our European NATO partners, Japan, other European trading partners, and ultimately to nations with which our ties are very uncertain.

The intricacies of formulating policy are illustrated by the problems of trade in defense equipment with our NATO allies. The United States is pursuing multinational cooperation and integration of defense-related development programs through vehicles such as the Nunn Amendment, both for political-military reasons and to promote sales for U.S. defense firms. But these actions will also lead to greater competition from European defense companies in the United States and abroad. Access to European technology will be offset by the diffusion of U.S. technology.

Policy decisions regarding foreign dependence for defense needs fall into the jurisdictions of DoD and the Armed Services Committees. But the broader issue of how the United States should deal with the international economic situation in order to achieve these and other goals will involve a much more diverse cast of players. Congress will have to decide both how it will approach the problem in a manageable way, and what restructuring might be necessary within the executive branch.

MANAGEMENT OF PROGRAMS AND FACILITIES

The system used by the Department of Defense to run its technology base programs is dominated by two major characteristics that are practically unique among large technology-based organizations. First, the system is inherently decentralized, with planning and management dominated by a bottom-up approach. Second, it relies heavily (although not exclusively) on a large, diverse group of government owned and operated laboratories devoted to defense research.

Planning of technology base programs is done primarily by the Army, Navy, Air Force, DARPA and the other defense agencies, and SDIO.[9] The Office of the Secretary of Defense primarily serves as a monitor and data collector, deferring to these component organizations on matters of program direction. OSD collects budget requests and passes them to Congress; after the funding is approved, the component organizations run their own programs. Within OSD there is a hierarchy of oversight that inhibits rational integration of programs: the Services report at one level, DARPA reports one level up, and SDIO reports only to the Secretary of Defense. While not unique in running its programs this way, DoD follows a minority path. Most organizations exert much more top-down coordination and control over planning and management of technology programs.

The labs owned and run by DoD have two general shortcomings. First, most are not strictly laboratories and lack the multidisciplinary pool of talent necessary to be effective in developing a broad range of modern technology. Although they interact, they are generally independent of each other. Developing technology is not the only (or even the primary) mission of most of these labs, but access to that capability underlies the ability to perform other missions. Second, the government-owned, government-operated (GOGO) management arrangement has created many problems that impair the ability of the labs to function effectively. Other organizations structure their lab systems and lab management differently.

Worldwide, there are three major trends in the planning, management, and performance of technology development: top-down planning; centralized management; and collaboration. Moreover, among the governments of other industrialized nations there is a movement away from concentration on defense research and toward emphasizing civilian research that can be exploited for both economic and defense gains, as well as a movement away from government ownership of laboratories.

Department of Defense Technology Base Programs

The Department of Defense does not have a centralized system for strategic planning of technology base programs. It has a federated system in which the central authority—the Office of the Under Secretary of Defense for Acquisition—plays an advisory and coordination role, but either lacks or fails to exercise the power to make major decisions. Those decisions are made by the component organizations—the Services, DARPA, and SDIO. The planning process is both top-down and bottom-up, but it is clearly dominated by the bottom-up approach: most real decisions are made within the component organizations. OSD provides general guidance and reviews Service programs, but does not exercise any strong role in molding them. Attempts by OSD to mold programs (usually to keep to budget ceilings) are often viewed by the Services as uninformed, capricious, and arbitrary. This arrangement generally results in OSD not being able to guide or coordinate the technology base programs. However, OSD has in the past provided leadership for some special cross-Service programs, such as VHSIC, MMIC, SEI, and STARS.[10]

---

[9] In fiscal year 1989 the three Services together will spend 40.2% of the technology base funding (6.1 plus 6.2 plus 6.3A). SDIO will spend 39.3%; DARPA will get 13.8%; and the remaining 6.7% will be spent by the other defense agencies—the Defense Nuclear Agency, the Defense Communication Agency, the Defense Mapping Agency, the Defense Intelligence Agency, the Defense Logistics Agency, and the National Security Agency. Among the agencies, DARPA occupies a special place because of its role as a source of R&D to complement Service programs. Efforts of the other agencies tend to be more specialized.

This system is not necessarily bad, but it seems to be ineffective in producing a coherent technology base program. Those who believe OSD ought to provide strong leadership find the current system disappointing. To those who believe that OSD ought not to be controlling technology planning, it is the proper approach, even if OSD occasionally weighs in too heavily and disrupts programs. They believe that the users of technology—the Services—ought to plan and control its development, that giving too much power to OSD risks losing Service support for technology base programs, and that the Services are better able than OSD staff to preserve technology base funding.

Central planning and central management are two separate but related issues. Without top-down planning a program lacks, as DoD's currently does, a broad consistency of purpose and coordination to ensure that important areas are not left unaddressed, and that healthy competition among competing developments does not become wasteful duplication. Central management can help ensure that the results of central planning are carried out, but it can also result in control of programs by those least able to understand them.

Organizationally, the problems arise from two sources. First, OSD lacks either the ability or the will to exercise power over the Services. And second, there is no one individual or office that serves as a focal point and coordination center for the technology base programs of all the component organizations. This results in diffusing the power to plan and coordinate, and precludes establishing a high-level advocate for technology base programs who is free of competing interests. The Goldwater-Nichols reorganization changed the players and their titles, but did not correct these basic problems.

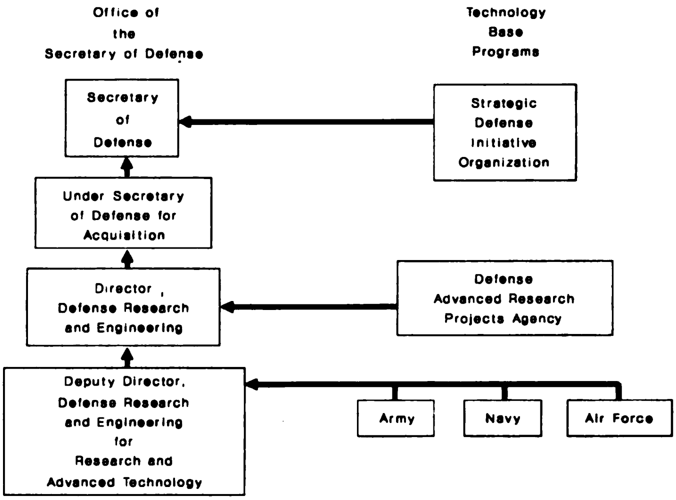
Within OSD, all technology base programs *with the exception of SDI* are the responsibility of the Undersecretary of Defense for Acquisition. This is shown schematically in figure 1. But the technology base is only one small part of what he is responsible for—he also oversees the rest of research, development, test, and evaluation (RDT&E) as well as all of procurement. DARPA reports directly to the Director of Defense Research and Engineering (DDR&E) for oversight, but oversight for the Army, Navy, and Air Force programs rests one level farther down the chain with the Deputy DDR&E for Research and Advanced Technology. The DDDR&E(R&AT) is the highest ranking official with responsibility only for technology base programs, but he only has responsibility for less than half the technology base. Thus, the Service programs are coordinated at the DDDR&E(R&AT) level, but they are coordinated with DARPA's program one level higher up the chain, and balanced with SDI only at the highest level. This produces a hierarchy of influence among these component organizations and a mismatch that makes it difficult to balance their demands.[11] Moreover, no one with the power to oversee the entire technology base program can be an

---

[10] Very High Speed Integrated Circuits; Monolithic Microwave Integrated Circuits; Software Engineering Institute; Software Technology for Adaptable, Reliable Systems.

[11] Manufacturing technology programs, vital to ensuring producibility of items, are accorded a generally lower level of oversight and advocacy than product technology programs.

Figure 1—A Hierarchy of Oversight


Office of the Secretary of Defense
Technology Base Programs
Secretary of Defense
Strategic Defense Initiative Organization
Under Secretary of Defense for Acquisition
Director, Defense Research and Engineering
Defense Advanced Research Projects Agency
Deputy Director, Defense Research and Engineering for Research and Advanced Technology
Army
Navy
Air Force

SOURCE: Office of Technology Assessment, 1989.

advocate for it unencumbered by other, possibly conflicting, responsibilities.

Overall goals for technology base programs are supposed to be specified in the annual Defense Guidance document. But in reality, the Defense Guidance devotes little space to the technology base, providing only very general guidance that can be used to justify just about anything the Services, DARPA, and SDIO want to do. The result is that these component organizations plan more or less independently, based on internally generated criteria, and link their plans to the general language of the Defense Guidance. The OSD review of Service plans is predominantly a data-gathering exercise with little real power exerted from OSD. And real coordination is hampered because DARPA and SDIO programs (which together account for over half of the funding) are considered only at higher levels. Thus the Services and agencies dominate the planning process.[12]

It is not the case that the Services do not talk to each other or to DARPA or SDIO. There is considerable coordination among projects having similar technical foci, but this occurs at the project level and not at the overall program level. There is much technical interchange but little programmatic coordination. OSD could exert strong influence at this level through its technology reviews, but it only conducts a few such reviews each year.

---

[12] Top level planning is typically not done within the Services either; ideas come up from lower levels. However, in recent years the Services have been conducting high level studies of their future technology needs: Air Force Forecast II; Navy 21; and Strategic Technology for the Army. The Air Force had been planning some of its technology base program around the results of Forecast II.

Because no single individual or office has responsibility for all technology base activities and only for the technology base, it is difficult to have a strong and consistent advocate for technology base both within the DoD bureaucracy and in relations with Congress and the Office of Management and Budget (OMB). (This problem is mirrored within the Services with similar results.) Nevertheless, OSD personnel spend a large part of their time defending technology base programs or answering congressional mail, leaving little time available to evaluate technology base programs. It is not surprising, therefore, that OSD and the Services do not have a systematic DoD-wide approach to evaluating technology base activities. Evaluating last year's programs is a key to planning next year's. If OSD personnel do not have the time to evaluate last year's programs, they lack a solid basis on which to judge Service plans for next year.

The structure of the bureaucracy is not the only contributor. The relationships among institutions within DoD also play a major role. The Services and DARPA have traditionally had the upper hand with OSD. SDIO was designed to be able to proceed without interference from OSD or the Services. Typically, this sort of "pecking order" will persist in the absence of positive actions to change it.

Personnel is another factor. Although OTA has encountered OSD staff who are competent, dedicated, and overworked, there is a consensus among experts that, like the labs, OSD suffers from restrictions that limit its ability to get and keep the best people. While experts are divided as to how to solve the problem, most agree that paying more and decreasing career restrictions would help. Some believe that the problems would be best solved by vesting power in a professional staff with long tenure, removing it from the hands of political appointees and other "short timers." Others think that only a constant infusion of "new blood" will help: rearranging the system so that very capable managers could take such jobs for a fixed term (e.g., 4 years) and then return to industry.

Department of Defense Laboratories

Reports on the shortcomings of DoD laboratories go back at least 30 years. The mind-numbing array of specific issues that these earlier reports have raised can be captured by two fundamental questions:

- Does the DoD have the type and quality of laboratories it needs?
- Are the management arrangements under which these laboratories are run inhibiting their ability to perform as needed?

Type and Quality of Laboratories

To be precise, DoD has no laboratories. The Army, Navy, and Air Force departments own and operate a large number of research, development, and engineering (RD&E) centers, none of which are laboratories in the pure sense, i.e., institutions solely for conducting research. These centers perform a variety of functions ranging from research through full-scale development to occasional limited-scale manufacture of military equipment items. The mix of activities varies from center to center, with some—such as the Naval Research Laboratory and the Army's Harry Diamond Laboratory—being more heavily oriented toward research than others. As a shorthand, the term "defense laboratories" is used to refer to these government owned and operated RD&E centers.[13]

The structures of the defense laboratories—how big they are, what kind of work they do, etc.—have evolved historically, based in part on the different procurement systems of the three Services and the roles each has seen for its laboratories. These structures are quite different among the labs. However, the management arrangements and modes of operation—which are similar across all of them—are a consequence primarily of law and also of DoD and Service regulations.

---

[13] DoD is also supported by contractor owned and operated laboratories such as the John Hopkins University Applied Physics Lab and the MIT Lincoln Lab, and by national laboratories operated by contractors for DOE. For more information on the institutions that support the defense technology base see: *The Defense Technology Base: Introduction and Overview*, OTA-ISC-374 (Washington, DC: U.S. Government Printing Office, March 1988).

Comparing the defense laboratories to other government R&D institutions is difficult because DoD's role as a large purchasing agency makes it almost unique within the government. NASA is perhaps the closest analog because it too purchases products of technology, but it also builds things and conducts research and space exploration. The national laboratories that support the Department of Energy build nuclear weapons and pursue a broad base of research for the furtherance of science. Industry, which also runs laboratories, ultimately builds things.

Comparing DoD labs among themselves is also difficult because no two are really alike. They differ in three distinct dimensions: the subject areas they focus on; the mix among categories of work (6.1, 6.2, etc.); and the weighting of their missions among a number of basic tasks. In addition to conducting research and development, these tasks include:

- buying R&D from contractors and monitoring the contracts;
- advising program offices on responding to proposals from industry to do development and production work (i.e., acting as "smart buyers" of technology);
- providing a base of technical expertise and know-how that can be drawn upon to solve problems as they arise or to follow new areas of technology;
- training young officers in science and engineering;
- solving technology-based problems (or equipment-based problems) encountered by field commands; and
- designing and producing very small numbers of special purpose items needed by field commands.

They also differ in size, source of funding, and the orientations and "cultures" of the organizations they primarily work for.

All of these differences make objective evaluations and comparative ratings of these institutions very difficult to perform. Most evaluations and comparisons appear to be subjective ones, even when performed by highly qualified individuals. For example, Service labs are frequently criticized for not doing top-flight science, especially when compared to national laboratories or major university laboratories; but performing scientific research is not the major mission of these facilities.

Nevertheless, there is a common thread among all the tasks the labs perform: they all require the laboratory to be a center of technical expertise. Most don't *require* the staff to be conducting research and contributing to the advancement of science or technology, but all *benefit* from a staff that has hands-on expertise: a staff member who is contributing to the leading edge is closer to it than one who is simply reading about it, and is more likely to get a seat at the table when the real experts meet.

There are three basic approaches to providing the research core of an R&D facility. The first is to build a large, diverse, multiprogram laboratory with a staff that does research in a broad range of disciplines. The DOE national laboratories fit this description, as do the corporate research centers of several very large corporations such as IBM, AT&T, and General Motors. These labs push forward the frontiers, provide a large pool of talent that can be directed and redirected to solve problems or follow new areas of technology, and provide a base of knowledge from which other labs can draw for more narrow applications. Staffs typically number well over 1,000 and are heavily weighted toward advanced degrees. The Naval Research Lab is the only DoD lab that fits this mold.

A second approach is to build labs with staffs of a few hundred that concentrate their efforts in one or a few areas. Several Army laboratories—Night Vision, Harry Diamond, Electronic Technology & Devices, etc.—are structured this way. These facilities can have programs that are at least as good as those of the multiprogram laboratories in a few selected areas. However, this focus is bought at the cost of loss of breadth and flexibility to respond to a broad range of problems. Moreover, as modern technology becomes more complex, even a single area of concentration can rest on a broad base of underlying disciplines. Size can constrain these laboratories from effectively pursuing their few areas of concentration and from shifting their focus. This problem of lack of critical mass is even more pronounced in the third type, the model followed by most Defense labs: a medium to large RD&E center with small cells of expertise embedded in it. These labs do not have in-house research as a focus, but as a supporting function. Hence the cells of expertise, however skillful and productive, tend to be narrow and thin: in some cases the departure of one or two key individuals could destroy that expertise.

In detail, the Army, Navy, and Air Force run their RD&E centers differently. But in general they all function the same way: technology generated in-house, in other Service labs, externally under contract, and any other place the staff has access to, is assimilated with the aim of transitioning it into the procurement system. The accumulated base of knowledge is used to advise the procurement officers regarding the technical qualities of various proposals to develop and build systems.

The central question is whether this system has been, and is really capable of, delivering the goods. Does the technology transit into and out of RD&E centers, and are the staffs up to the job? This is a very complex question requiring an intensive investigation, but it is absolutely key.

If the answer is "yes," Congress ought to stop worrying about the labs and let them get on with their work. Steps might be taken to make their jobs easier by easing management burdens. However, even if the labs are judged to be doing a good job, budget constraints may make it necessary to consider restructuring.

If the answer is "no," there are a number of steps that might be taken to fix things. These range from taking steps to ease management problems (which will be discussed below) to drastic reorganization of the entire system. Some involve centralizing, consolidating, closing, and moving institutions. **However, such steps have far-reaching consequences and can be nearly irreversible. They ought to be taken only after much deliberation.**

One approach would have each RD&E center include or be closely associated with a large multipurpose laboratory, the small cells of expertise being replaced by a large, diverse pool of technical talent. Clearly, doing so for each RD&E center would be prohibitively expensive.

An alternative approach would be to provide each Service, or DoD as a whole, with a central corporate lab and tie the RD&E centers closely to it. The Naval Research Lab might be a model. Smaller labs of more limited scope are a second choice, but because they are inherently less flexible than multiprogram labs, arrangements would have to be made either to shift their focus or close them down as the areas of technological interest shift. As an alternative to building up the research bases within the Services, greater use might be made of DOE national labs as technology bases for the Services. Consolidating facilities either within each Service or across Service lines under OSD could offset the cost of expanding the underlying labs. But this runs the risk of cutting the links of the RD&E centers to their parent buying commands and further restricting the transition of technology into the procurement system. Unless handled carefully, it could also sever the very important links of the labs to the field commands.

Management Structure of Laboratories

The problems that plague the Services' government-owned, government-operated laboratories (GOGOs) and the causes thereof have been extensively documented. They are inherent in the laws and regulations that govern the operations of these labs. While these laws and regulations have not changed greatly over decades, the trend within the last few years has been for their application to become more onerous, making the government labs less attractive places to work at a time when the market for technical talent has become much more competitive.

The difficulties fall into three related categories: problems in recruitment and retention; difficulties in conducting the day-to-day business transactions necessary to get the work done; and long delays in updating buildings and major equipment. The latter two are problems in their own right as well as contributors to personnel difficulties. Effective management is also impeded by funding that is often unpredictable and fluctuates from year to year.

Even premier laboratories, like the Naval Research Lab, are having difficulty attracting the best and the brightest. Many of the RD&E centers have all but given up trying: they now recruit from a small circle of mostly local schools and hope to "grow" their own in-house expertise. OTA's observations support the points made in earlier studies:

- most of the labs have difficulty hiring and retaining highly qualified personnel;
- the government is at a major disadvantage in competing with industry and academia; and
- the system makes it difficult to reward good performers, penalize the poor performers, or tie salary closely to performance.

The "NOSC/China Lake Experiment," in which the Navy loosened the salary structure for scientists and engineers at the Naval Ocean Systems Center and the Naval Weapons Center at China Lake, helped with recruiting and retention in the entry and midlevels. Similar novel approaches including salary structure and educational opportunities are under consideration by the Services. But since these do not raise the ceiling on salaries; they do little to solve the problem of attracting and retaining key senior people. Losing senior researchers is a double liability: exceptional senior people do exceptional work, and they also attract younger people, many of whom will accept otherwise less attractive work conditions in order to work with someone special.

Interesting work helps to attract and retain people. Good people stay if the work is challenging, if discretionary funding is available to allow them to "follow their noses," and if they have an opportunity to pursue a technical career without being sidetracked into management. But increasingly, technical people in Service labs can only get ahead if they become managers, and in those management jobs they spend an increasing amount of their time in administrative tasks and insulating their bench-level people from bureaucratic "paperwork" imposed from above.

At most DoD labs the Technical Director has little or no control over the most important support elements of his organization—the personnel office, the general counsel, the procurement office, etc., all of which report to parent commands. And construction of new facilities is handled out of military construction (MILCON) accounts for which the labs usually fight a difficult, and often losing, competition with a long list of other claimants. This results in obsolete facilities.

The Defense Science Board has recommended changing the laws and regulations that are causing the problems, loosening up the system to enable the Defense labs to compete more effectively. While this might be helpful, it would require a long list of changes in both legislation and government regulations. This involved agenda could be very difficult to complete. However, a congressional decision to treat the laboratories differently from other government offices might facilitate the changes.

An alternative would be to convert the labs to government-owned, contractor-operated, or even to contractor owned and operated (COCO) facilities. This would seem an easy way out of the morass of government red tape. GOCOs do have greater management flexibility in personnel management, but the evidence for greater flexibility is ambiguous in areas other than personnel. GOCOs can pay higher salaries, can hire and fire more easily, and have much greater flexibility in rewarding good work and shifting personnel. They also display greater flexibility in shifting the focus of their work, and have some advantages—although not so dramatic—over GOGOs in their ability to purchase equipment and facilities.

DOE GOCOs appear to show a greater aggressiveness in seeking out and developing technology. And, at least in the design and manufacture of nuclear weapons, transition of technology into applications is more direct than it typically is in DoD. But this is not necessarily a consequence of their being GOCOs. Size, full-spectrum stance, and research-oriented culture are all contributors. So is the relationship that has evolved between DOE and its labs: the missions of the labs have been construed in a very broad way, facilitating changes in program directions as technology evolves.

While there are some real advantages to converting to contractor operation, there are some important offsetting factors. No government-funded institution can escape oversight merely by converting to contractor operation. Funds derive from congressional appropriations, and Congress holds senior officials of sponsoring agencies accountable for their use. Thus, the tendency is for the government to impose on its contractor laboratories many of the same rules and regulations it lives under. Consequently, with time GOCO labs tend to become more like government-operated laboratories. Government rules under which the sponsoring agencies operate tend to be passed down to the contractors, so the GOCOs are not free of the majority of government impediments. Government policy appears to be that even though government regulations do not apply to GOCOs, GOCO practices ought to be consistent with them. OTA found that the perception of "red tape" and the burden of bureaucratic paperwork reaching down almost to the bench level was no different at GOGOs, GOCOs, and COCOs.

Although there have been many studies of government labs since the 1962 Bell Report, none have questioned its finding that there are "certain functions which should under no circumstances be contracted out. The management and control of the Federal research and development effort must be firmly in the hands of full-time government officials clearly responsible to the President and Congress."[14] There are some functions that are inherently governmental: passing them off to contractors would raise major questions. For example, being a smart buyer and advising a program office on the technical merits of proposals is probably not a responsibility that ought ultimately to be entrusted to a contractor, although today contractors are part of that process.

One advantage of government labs—and a major function—is that they can respond immediately to problems that emerge in the field. Staff can be ordered to stop whatever they are doing and turn their attention to the problem at hand. This would be more difficult for contractors to do, unless the contract had been carefully crafted to allow for the contingency.[15] At several contractor operated facilities OTA was told that response times would have to be measured in months, if not years.

---

[14] *Report to the President on Government Contracting for Research and Development*, reprinted in W.R. Nelson (ed.), *The Politics of Science* (New York, NY: Oxford University Press, 1968), p. 200.

While all DoD labs could benefit from fewer restrictions, not all are equal candidates for conversion to GOCO status. Those that conduct in-house R&D would be better candidates than those that function primarily as "smart buyers." Similarly, those that cannot solve their management problems within the government system would be more likely candidates for conversion than those whose managers believe they can.

Other Approaches

After examining a number of approaches used by other organizations to manage technology programs, some basic themes emerge that may be applicable to DoD management of its technology base programs and laboratories. First, in most governments and companies, R&D policy is approved at the upper levels of management and promulgated throughout the organization. Second, centralized control over research projects is the rule. It is supported by frequent reviews and combined with a readiness to cut losses when projects do not pan out and to buy technology outside the organization if that appears to be a more economic approach. Third, both public and private organizations are moving toward collaboration as a means of affording research of the magnitude dictated by modern technology. Finally, on a broader note, the Europeans appear to be moving toward the Japanese point of view that technology efforts ought to be focused on enhancing the economy: a strong high-tech economy will produce both more money available for defense and "spin-on" of technology for defense purposes.

For at least two decades the Europeans have been worried about their economic positions, particularly relative to the United States. But the emergence of Japan and other Asian nations as economic powers has greatly intensified their concerns. This has spurred efforts to integrate the European Community (EC), notably the movement to a "single Europe" in 1992. Moreover, as their fears of economic problems have increased, their anxiety over Soviet military power has receded. Hence the mood is to reduce the drain on the economy of defense oriented R&D, while increasing substantially research oriented toward civilian products. The Europeans are looking for ways to make defense R&D support civil production; defense labs are increasingly viewed as national assets that can be used to help make civilian industries productive. The trend appears to be to do research and exploratory development (the equivalent of 6.1 and 6.2) predominantly in civilian-oriented labs. Only in the advanced development stage would the work take on a more military-oriented cast. The prevailing philosophy appears to be that science and technology policy should be integrated whenever possible with economic and industrial policies. In this regard, the Europeans are moving away from the U.S. model and toward the Japanese model.

It is tempting to take the attitude that if our system has significant shortcomings we ought to adopt someone else's. But this approach is fraught with peril. While there are important lessons to be learned—and these general themes appear to be worth considering—it is not necessarily true that DoD can simply adopt some other system as its own. All organizations are different, and they do not all see themselves as solving the same problems. Management approaches tend to be rooted in corporate "culture" at least as much as they are the result of dispassionate analysis. It is somewhat dangerous to adopt the attitude that what works for some other organization ought to work for DoD. For example, the sheer scope and size of DoD's technology base activities dwarfs nearly every other organization examined, and might even rival the aggregate of them. Furthermore, it is not clear that other organizations are significantly more successful than DoD is in developing and nurturing technology and using it to good effect. The success story everyone immmediately turns to is Japan. But Americans are not, and do not behave like, Japanese. And the Japanese seek to use technology somewhat differently than does DoD.

---

[15] For example, level of effort support contracts.

Planning and Priorities

In contrast to DoD, in which a laissez-faire approach and "bottom-up" planning predominates, most Western European governments set national civil and military R&D objectives from the top. Working through central committees or advisory panels, cabinet-level officials set priorities and ensure that the goals are translated into specific programs in either government or private laboratories. The technical experts are usually left free to determine the composition of the specific programs, but they must be able to justify program relevance to higher authorities. In addition, the European Community is exerting an increasing top-down influence on the member nations' research programs. Exploiting allies' work and avoiding duplication of effort is a growing theme. The Japanese approach is perhaps less formal, emphasizing government/industry consensus building and the role of industry, but ultimately major decisions are made by a central body.

Industry generally follows a somewhat similar centralized approach. Major corporations typically have central procedures for establishing business objectives, including identifying the key technologies that are expected to contribute. Once these selections are made, the component companies are free to decide how to pursue them. But corporate oversight typically remains continuous and close.

There has been strong criticism that U.S. defense R&D focuses too much on the near term, both in government and in the private sector. European companies are even more likely than U.S. companies to spend their R&D money for near-term applications. This trend has become more pronounced recently in both Europe and the United States as technology base expenditures have declined as a proportion of defense spending. In contrast, however, budgets for long-term research—particularly civil research—are increasing for many European countries and for the EC. This is tied to a perceived linkage between R&D, economic competitiveness, and prosperity. Governments are seeking to improve their industries' competitive positions by making civil research the driver and blurring the distinction between civil and military R&D. The Europeans' short-term focus and declining funding in defense research appears to be offset by a longer term focus and more generous funding for civil research. In Japan, the government role is greatest in long-term developments for which the risks are high and the payoffs not evident.

Growing fear of Japanese and U.S. industrial competition has fostered European interest in large-scale, centrally directed technological initiatives. These have been largely multinational in nature, such as ESPRIT, EUREKA, RACE, and BRITE,[16] although there have been single nation programs such as the U.K. Alvey program. These are modeled, in part, after a succession of U.S. initiatives—beginning with the Manhattan project—that, while not always successful, propelled technology forward. Large collaborative efforts are also employed by the Japanese, but their efforts tend to have more industry funding and less government money.

A similar approach currently in favor in Europe and to an increasing extent within U.S. industry is to employ special research teams, or "centers of excellence," often in collaboration with universities or potential competitors. These groups concentrate on technologies where a large critical mass of personnel and other resources, or interdisciplinary research, is considered essential. U.S. examples are SEMATECH, the Electric Power Research Institute, Semiconductor Research Cooperative, and the Microelectronics and Computer Technology Corp.

---

[16] European Strategic Program for Research in Information Technology (ESPRIT); European Research Coordinating Agency (EUREKA); Research and Development in Advanced Communications for Europe (RACE); Basic Research into Industry Technology for Europe (BRITE).

Management and Control

European governments not only plan their R&D programs centrally, they also manage the execution of those programs centrally. Large companies also tend to keep tight central control. In both cases, the trend is also toward centralized control of laboratories in an attempt to establish the optimum balance between generic research and product-oriented (or mission-oriented) research.

DoD's laboratory system is basically mission-oriented, with most laboratories dedicated to specific warfare specialties. Mission focus provides a closer link between technology and military applications, but it also encourages duplication in facilities, resources, and projects. European labs and programs are increasingly organized along technology, not mission lines. In France, Germany, and the United Kingdom the defense research activites are planned, organized, and managed by central authorities independent of service requirements and development activities. Centrally managed civil research programs are generally oriented around generic technologies. Similarly, EC programs are directed toward enabling technologies, with applications left to industry.

DoD's extensive network of government owned and operated laboratories is unique among Western defense establishments. With the exception of the United Kingdom, European governments own few, if any defense labs, and the British are in the midst of drastically consolidating their laboratory system. However, there are many more European government-owned and government-sponsored laboratories doing civil research.

Industry is generally moving in two directions. Most R&D is being moved out to the component companies. Some corporate research centers are being pruned back or even closed. As money gets tight, it is easy to view corporate research centers as expensive luxuries—"money sinks"—rather than as investments. But at the same time corporations are establishing corporate level centers of excellence in key technologies (or forming collaborative efforts in them). Technology is transferred to the product divisions, at least in part, by assigning personnel from the product divisions to temporary jobs in the central facilities and then moving them back to use and disseminate the technology they studied and helped develop. Industry is also moving in the direction of collaborative research, sharing the escalating costs of modern technology. This research is of necessity technology oriented, not mission oriented.

Collaboration, Coordination, and Technology Transfer

Collaboration in research is now a way of life. High costs and worldwide competitive pressures are forcing governments and industries to pool their resources. Collaborative projects play a central role in Japanese R&D. European governments and industries explored cooperative research in the 1970s and early 1980s, but in the mid 1980s growing concern that they were falling behind the United States and Japan led to a series of serious collaborative measures. Moreover, the European members of NATO, after more than 20 years of ad hoc collaboration on defense and other aerospace projects, are now working on establishing a coherent, systematic program of collaboration. Breaking down the long-standing barriers that have isolated European companies from each other and fragmented markets is an explicit objective of recent high-technology collaborative initiatives. In addition, European companies see that they each have to draw on a broader base of technology than was necessary in the past. Recognition that Germany's strong position in world trade is due, at least in part, to a collegial, collaborative relationship between industry, academia, and government also helped spur interest in collaboration.

U.S. companies are not only engaging in collaborative programs at home, they are also joining with European (and Japanese) companies in various ventures.

Applications: Transitioning Technology From Lab to Products

DoD has been criticized both for leaving technology in the lab too long, resulting in obsolete weapons, and for rushing it prematurely into production—which creates unreliable products. Neither allegation is without foundation. Technology transition is one of the most difficult problems of development. European governments and industries appear to be no better at technology transition than DoD is. Japan appears to have a unique success at transitioning technology rapidly and effectively from the lab into production. The Europeans appear to be studying and beginning to apply the Japanese experience. Teams of researchers, designers, engineers, manufacturing specialists, and even marketers are being brought together early in the life of a product in order to perform in parallel what usually gets done sequentially. The parallel development of process (manufacturing) technology and product technology is considered a particularly important factor.

Examples of the close relationship that is essential between research staff and those who develop specifications exist in all successful companies; but in large and diverse government organizations the liaison and communication that is required may be jeopardized by interdepartmental rivalries and parochialism which only strong management and direction can dispel. In DoD, requirements for new systems are set by the Service buying commands, and development is done by industry. These are obliged by law to stay at arms length; the government labs provide the primary link between them—and the labs are not always successful.

GETTING TECHNOLOGY INTO THE FIELD

Government officials and others have expressed concern and frustration over the age of technology in fielded U.S. systems, particularly those just beginning to roll off assembly lines. Comparisons usually take two forms. First, government and industry researchers have laboratory developments that are clearly superior to what is going into the field. Second, dual-use technology in defense systems often lags significantly behind what is available in the consumer markets, and by the time a system has been in the field for 5 to 10 years it can seem outdated compared to what Ford or Radio Shack is selling.

Technology in production will always lag behind technology in the lab. Taking developments off the bench, engineering them into real systems, and getting those systems into production is a time-consuming process for military and civilian manufacturers, as well as for movie producers, think tanks, book publishers, and many other enterprises. Indeed, very little legislation moves instantaneously from brain storm to law. Major military systems are generally much more complicated than civilian products, and hence the product cycles are much longer.[17] In addition, the process of getting approval to begin a military project is generally considerably longer than the equivalent process in the consumer sector. Furthermore, military systems have long lives, and dealing with frequent updates is a logistical nightmare, so it is not surprising that changes occur much less frequently than the typical yearly changes in consumer products. It appears to make sense to change the current model Toyota because of a relatively small change in engine technology. (Indeed, it helps sales to tell consumers that this year's model is "all new" and "innovative," and technology is often changed just to enhance marketing.) But it makes absolutely no sense to rebuild the entire fleet of tanks every year to take similar changes into account. The problems of maintaining different equipment types in the field mean that decisions to update part of the total inventory, while often made, are not taken lightly. Finally, DoD is not in the business of developing and fielding technology for technology's sake; its job is to get better capabilities into the field in a reasonable time at a reasonable cost. Up to a point, it is not unreasonable to argue that new technology ought to buy its way onto a system.

---

[17] In commercial products, complexity is usually the enemy, something to be managed carefully.

Military-specific technology is usually the pacing technology for entire systems, determining the schedule for getting the system into the field and controlling the rate at which the dual-use technologies in the system get fielded. The entire acquisition system is geared to the pace set by these military technologies. It is often the case that after a system design is frozen, the commercial counterparts of technology embedded in it continue to move forward, sometimes dramatically, resulting in several generations of products before the military system is produced. This produces military systems that are not as advanced as some commercial products; but if responding to rapid changes in dual-use technology were to prevent freezing the design of a system long enough to get it into production, none of the technology would ever get produced.

Thus, while it can be misleading to compare fielded military technology to laboratory technology or selected consumer technology, it is important to ask whether new technology can get more quickly and more effectively into the field. (It is also legitimate to ask why the military cannot have the same products—like radios, CRT displays, trucks, and clothing—that consumers can go out and buy.)

The problem of getting new technology into the field is not that the United States is unable to develop new technologies with military relevance. It is rather a problem of the transition of that technology into engineering, the time needed to begin manufacture, and the rate at which new systems are built. It can be improved in three general areas: improving the **insertion** of new technology into acquisition programs (i.e., the transition from technology base to engineering and production); improving the **acquisition** process that engineers and produces systems; and improving the **affordability** of systems so that they can be bought more rapidly.

Technology Insertion

The technology development and system acquisition processes are largely (but certainly not completely) separate. Technology base work takes place in a variety of institutions, including some companies that ultimately build systems. Engineering and production are done in private companies (not always the same ones that did the technology base work) under the supervision of DoD program managers. This causes a major bottleneck at the point at which technology moves from technology base to acquisition. Several mechanisms exist to bridge this gap: general technical interchanges between Service lab people and industry; IR&D and contract research that involve some companies in a development; involvement of lab people with the program offices (part of the "smart buyer role"); and formalized Service transition programs.

Many studies of the transition issue seem to agree that nonsystem-specific prototyping, pursued with 6.3A funds, presents the greatest opportunity to improve technology insertion. It has the potential to solve two problems. By demonstrating feasibility, these advanced technology demonstrations help reduce the high risk carried by some technical developments. And they help correct overoptimism by demonstrating the limitations in the current state of the art. Overoptimism leads to promising too much, which in turn leads to disappointing systems and to lengthy and costly redesign efforts. The new emphasis within DARPA on prototyping is apparently an attempt to ease the transition into system design of technology developed under DARPA programs. DARPA has always been the focus of technology that does not fit neatly into what the Services want to do. However, if the Services do not take DARPA seriously, it is not at all clear that DARPA's prototyping effort will have any use.

Acquisition

In searching for the causes of delays, the acquisition process has been the primary candidate. Even when the system is working smoothly it seems to take a long time to move programs through; but it usually is not working smoothly. And when it bogs down, delays lead to further delays through escalating costs, compensatory stretch outs, and time-consuming attempts to fix any particular program's specific problems. While the consensus is that the system is in trouble, it has weathered study after study without apparent improvement.

Several studies have found that acquisition (advanced development, full-scale development, and production) takes longer than it used to. But the data are not all that clear: there is certainly no obvious trend toward rapidly increasing times. It does take longer in the 1980s than it did in the 1950s or 1960s, but there is not enough data to discern clear trends over the past decade. Studies of fighter aircraft procurement, the most-studied system type, conclude that whatever increases have occurred are in the front-end decision process and in production, not in full-scale engineering development. Data on other systems are less conclusive.

It is generally held that commercial industry completes programs more rapidly than does DoD, but there are significant differences between government and industry that make it possible for industry to avoid many of the basic problems that plague DoD acquisition. These basic problems are "built into the system," they are consequences of the characteristics of U.S. Government. For example, canceling a program that has grown too much in cost or schedule to be profitable is easier than canceling one that, despite schedule slippages and cost overruns, is judged essential for national security.

But enhancing national security is not the Nation's only goal. Goals like fairness, environmental protection, equal opportunity, jobs, and competition all figure into how both Congress and the Administration judge defense procurement programs. DoD itself has goals it must pursue in addition to managing programs efficiently: maintaining the defense industrial base, ensuring that the most efficient producer does not drive the others out of business (contrary to what industry would do), etc. Government is not solely concerned that a program provide the best capability at the lowest cost most quickly. Moreover, the political process in both branches of government—the tug and pull over resources and goals—introduces uncertainty into programs, even when Congress and high-level executive offices do not micromanage programs.

The structure of the DoD acquisition system is much more cumbersome than that of private sector companies. That structure is, in part, determined by government's size and unique role. DoD program managers are accountable to five or six layers of bureaucracy up to the Secretary of Defense. These layers typically have extensive horizontal structure, so the program manager (PM) has to satisfy a large number of people, many of whom have power over his or her program but no responsibility for it. To complicate matters further, the PM reports up one chain for oversight of the program, and up another for the planning, programming, and budgeting system which is responsible for determining the funding for the program. But this involvement of the OSD bureaucracy, as well as that of OMB and Congress, is part of the checks and balances on the expenditures of billions of dollars.

While industry shares many of DoD's problems, it has a very strong incentive to manage successfully: failure could mean bankruptcy. In many instances industry works under a simpler system involving a direct link between the program manager and a high company official having the authority to make decisions, settle disputes, and insulate the PM from external pressures. The PM has responsibility for the program: if it fails it is his fault and his job may be at stake. The DoD PM typically has to obtain several levels of approval for any action; there are many people who, in trying to ensure that the PM does not fail spectacularly, will also prevent him or her from succeeding spectacularly.

Several factors are major contributors to delays in programs: the sequential processes of requirements generation, resource allocation, and system selection; program variability (or instability) caused by many players making changes; bureaucratic paralysis; inappropriate organization for defense procurement; and the quality and incentive structure for procurement personnel. Underlying these are the basic structure of the government, the nature of the bureaucracy, the organization of the DoD procurement system, and the conservative risk-averse nature of government organizations.

Requirements generation and resource allocation involve the Services, OSD, OMB, and ultimately Congress. They are highly political, which often leads to overpromising in order to get program approval. Overpromising leads to cost growth and schedule slippage. But the system makes it easier to readjust the program to these realities rather than to go back and question the requirements that produced them in the first place.

Constant changes in defense acquisition programs are commonplace, leading to cost increases and schedule slippages. Variability results from the requirements process, the risks inherent in new technology, the political/budgetary process, and personnel turnover. While the disruptions caused by these factors can be somewhat controlled, the underlying causes cannot be eliminated.

Baselining—a form of contract between program managers and their Services—was developed to limit changes in programs. But making baselining work requires giving program managers more authority over their programs than they now have. Neither program managers nor Services can control budgets or other changes and conditions imposed by OSD, OMB, and Congress. Moreover, external factors that affect a program—like threat, doctrine, and resources—will cause changes in the program no matter how well it is managed.

However, Congress, OSD, and OMB can decide to limit their direct involvement in a program (or Congress can decide for the others). But, at least in the case of Congress, this would involve giving up power which it jealously guards. Congress has already agreed, in principle, to relax oversight for a few major acquisition programs, which would require reauthorization only at significant milestones rather than annually. As yet, none of these milestone authorizations have been submitted to, or approved by, Congress. Not all members are likely to agree that efficient functioning of defense acquisition programs is more important than other issues they are concerned with, including the (possibly shifting) interests of their constituents. The budget process specified by the 1974 Budget and Impoundment Control Act and Public Law 99-177 (Gramm-Rudman-Hollings) increases Congress' incentives to keep control of as many budget items as possible so that it can engineer the budget levels it agrees to.

Perhaps the most discussed problem is the bureaucratic burden individuals and companies must struggle through in order to do their jobs. A 1977 Defense Science Board (DSB) panel concluded that increases in acquisition times are all bureaucratic: "it does not take any longer to do something, it just takes longer to obtain the necessary approvals and acquire funding . . . ." The program manager's job has become increasingly complicated, accompanied by lengthening time to complete contracting actions and increased regulation, oversight, and auditing of contractors. The overall perception is that of increasing regulatory and bureaucratic burden, but studies have found the picture to be unclear. While some indicators of burden have been clearly increasing, others have remained the same or declined. Moreover, measuring the effects of regulatory and bureaucratic activity is even more difficult than measuring the activity itself. For example, estimates of the added costs due to regulations and bureaucracy range from 5 to 200 percent!

This "red tape" is unambiguously greater in government than it is in private industry. What in industry can be a straightforward, one-step, project initiation process involving the manager and a high corporate officer is in DoD a two-step process involving the PM, a committee within DoD,[18] and Congress. Both the DSB and the Packard Commission recommended bringing the system closer to an industrial model in this regard, and the Goldwater-Nichols Act tried to implement that.

Since the bureaucratic burden arises in part from government attempts to have programs satisfy goals other than getting the job done most efficiently, solutions can be of two types: those that try to streamline the system without changing its mix of goals; and those that seek to change the balance among goals, particularly the balance between having an efficient and successful program and satisfying all the other government goals. One suggested solution is to review all the regulations to determine whether each is still necessary and whether the aggregate could be streamlined somehow, a daunting task in its own right. Another suggestion is to shift the burden of proof from the PM to those who would slow down the project, making the PM innocent until proven guilty. For example, a competition advocate would have to show that the program was insufficiently competitive or that taking measures to enhance competition was important enough under the circumstances to warrant tampering with the program. But some higher authority would have to be responsible for balancing these claims against the interests of the PM who would always be served by ignoring them.

Some DoD programs do better than most: "black" programs (so it is said), and other special high-priority programs. This success is due in part to their high-priority which affords them high-level attention. Clearly, all DoD programs could not be treated that way or the system would overload. These programs also get special exemptions from various regulations. Granting similar exemptions to all programs would nullify the regulations, defeating the purposes for which they exist.

There has been widespread concern about the process that produces PMs and their chief assistants. These people are either military officers or civil servants. In 1986 the average tenure of PMs was about 2 years. This makes it difficult to give them real power over programs that run many times that long, and creates incentives for them to sacrifice long-term performance in order to look good on their watch. The military personnel usually, but not always, rotate rapidly in and out of the jobs in 2 to 3 years. They do not always have prior experience or relevant training. Many of the civil servants do not rotate, and "remain for so long that they resist innovation and change."[19]

---

[18] The Defense Acquisition Board, and perhaps others.

Affordability

One of the major contributors to delays in getting new technology into the field is the cost of modern development and procurement programs and the resultant program stretchouts and low buy rates. Almost all important systems cost enough to get close scrutiny by OSD and Congress. The battles are fought each year. The result is often that the funding requested by the program is reduced (in some cases dramatically), which slows the development pace and slips the date at which production is initiated.

Once the program is in production, DoD's tendency is to reduce the funding below what had been projected, in order to keep as many programs alive as possible. This leads to buying fewer of any particular item per year, which has two major consequences. First, obviously the slower the rate at which a system is bought the longer it will take to get the capability into the field. It may not delay Initial Operating Capability, but it will certainly delay the date at which a significant capability is fielded. Second, providing insufficient funds to procure at planned rates raises the unit costs, which further decreases the number that can be bought per year.

DUAL-USE INDUSTRIES

Most of the technology that is engineered into defense systems is still developed in the "defense world" of DoD's laboratories and contractors. This is particularly true of the exotic technologies that are the centerpieces of advanced designs. But increasingly, building those systems depends on developments that take place in the civilian sector, a civilian sector that is driven by the international marketplace. This was dramatically illustrated by events during the first week of November 1988. A company called Avtex, which manufactured rayon fibers for the apparel industry, announced that it was shutting its doors in response to foreign competition in the clothing business. This sent shock-waves through DoD and NASA when it was discovered that Avtex was the only producer of fibers that were critical to the production of missiles and rockets. While other sources could be qualified, and other fibers might be found to substitute for the rayon that Avtex made, that process would take longer than the period of time the available supply of rayon would support production. Negotiations were soon completed to keep Avtex open.

High-technology industries are becoming increasingly internationalized: foreign companies and multinationals are technology drivers. Large international markets generate huge amounts of capital that fuel research and development into new products and underlying technologies. The defense components of these markets are often small, giving DoD little or no leverage over the directions developments will take. DoD has to choose between playing a follower role, or spending large amounts of money to keep a competitive leading edge capability in defense laboratories and industries. But because of the cost of developing modern technology, it seems unlikely that DoD can afford to develop all the technology it needs in parallel with the civilian sector. Dependence on the private sector is not all bad: commercial development of technology is a basic strength of the industrialized, non-communist world. Failure to exploit developments in the civilian sector would be throwing away a major advantage over the Soviets. But relying on the private sector means that defense development and production will depend increasingly on the health of the civilian sector and on the ability of DoD and its contractors to gain access to the products of the civilian sector. Thus DoD faces two challenges: maintaining access to the technology developed in the commercial sector, and coping with the international nature of that sector.

---

[19] J. Ronald Fox and James L. Field, *The Defense Management Challenge: Weapons Acquisition* (Boston, MA: Harvard Business School Press, 1988), p. 312.

DoD and Congress face three generic problems. The first is keeping dual-use companies interested in doing defense work. Some are leaving the defense business. Others have technology that DoD could use, but are reluctant to get into the defense business. These attitudes are based primarily on perceptions of the difficulties of doing business with the government, and the problems of doing business in both sectors simultaneously. Second, high-technology industries are moving offshore due to foreign competition. Some have almost vanished, others are on the way. Furthermore, it seems likely that in the future some new technology-based industries will develop in other nations and never take root here. Careful balance will be necessary to nurture U.S. industries while maintaining access to foreign technology. Congress will have to consider U.S. trade and industry policy carefully. Third, entire industries, individual companies, and the many-stepped trails that lead from raw materials to finished components cross many national borders. In many cases, it is nearly impossible to determine what a U.S. company is, while in others it is difficult to separate U.S. companies from their foreign partners. Congress will have to come to grips with the meaning of foreign ownership and foreign siting for the availability of technology, as well as with how dependent the United States can afford to be on foreign sources. These international relationships will complicate attempts to protect U.S. supply sources.

Barriers Between Civilian and Military Industry

Since World War II, the U.S. economy has evolved relatively separate military and commercial sectors. They have different business practices, one dictated by government regulations and procurement practices and the other flowing from the marketplace. In recent years the *international* market has had a considerable effect on shaping the latter.

Government practices have made it increasingly difficult for DoD to obtain state-of-the-art technology in areas where civilian industries are leading, making defense business unattractive to innovative companies and contributing to traditional suppliers leaving the defense business. Many firms that are not heavily involved in defense business are reluctant to deal with the government because they consider it to be a bad customer. Moreover, many do not need DoD's business and can simply opt out. The barriers are not technological, but legal, institutional, and administrative. Some are the direct result of legislation, others flow from DoD regulations, including overly cautious interpretations of laws. Some commercial firms cite excessive regulation, burdensome auditing and reporting requirements, compromise of trade secrets, and loss of data rights. Large defense companies have similar complaints, but have adjusted to working under these conditions. But for smaller companies, getting into the defense business means heavy investment and reorientation of business practices.

A company can organize to do business in either sector, but can rarely do both under one administrative roof. Companies that do business in both sectors typically have separate divisions that are organized differently and almost never share staff, production and research facilities, data, and accounting procedures. These differences are profound. In large aerospace companies the commercial side responds to market conditions, whereas the military side responds to Service programs, government regulations, and the Federal budget. Their planning is "slaved" to the Federal planning and budgeting cycle. Corporate structures and rules tend to mirror those of DoD and tend to pass government encumbrances down to lower level suppliers. Companies doing government contract work have to keep their books in formats that are compatible with government auditing rules and procedures.

Following these and other government rules adds to the costs of doing business, costs that can legitimately be passed on to the government customer. Tighter control of the defense business ultimately translates into higher costs to DoD. The United States is apparently willing to bear this increased cost as the price of other benefits—for example, knowledge that the government is trying to keep the process honest. However, imposing the same rules on dual-use industries has other, farther-reaching effects. It makes them reluctant to do business with DoD and encumbers their products with additional costs that may adversely affect their international competitive positions. When dealing in both sectors, companies can accept either the higher cost of following government business procedures, or the higher costs of maintaining two separate business practices—one for government business and one for other business. With some exceptions, DoD product specifications are also seen as encumbrances; characteristics that are of no value in the commercial marketplace are engineered into the products for sale to DoD.

Government contracts regulate profits, creating a business environment very different from that in which most high-technology companies deal. These companies are used to investing heavily in R&D, recovering their investments through large profits, and then reinvesting in the next generation of product. Moreover, their customers see only the product, whereas DoD insists on knowing how the product was made. Defense contractors get by on small profits, in part because much of their R&D costs are covered either by contract or IR&D recovery. But dual-use companies qualify for little if any IR&D recovery and are reluctant to do contract R&D. The government owns the rights to data generated by contract R&D so that it can keep the subsequent phases of a project competitive by making a data package available to all bidders. But companies that live by their innovation in the commercial market see this process as offering their trade secrets to the competition. DoD procedures provide the winner of a development contract poor profit margins, no guarantee of a continuing relationship with DoD, and little incentive to innovate and provide a superior product.

Some industries, like advanced composites, are currently so closely tied to the defense business that they are apparently willing to live with these problems. But they worry that their competitive position may be damaged as the commercial market develops. At the other extreme, the companies that produce fiber optics are reluctant to get involved in a defense market they see as always being a small part of their business: they do not necessarily see the potential payoff as worth the aggravation.

While the small amount of military fiber optics business might be seen as evidence that the industry is not really important to defense, some within the DoD see it as a critical new technology for future systems, one in which defense could gain tremendously just by exploiting what has been and is being developed in the commercial sector. But DoD has been generally slow in adopting fiber optic technology. Program managers have much to lose by inserting risky new technologies which may delay schedules and increase costs, but little to gain because the advantages of the substitution will usually become apparent only on someone else's watch.

In the software industry, the divergence between government and commercial practices has been enough to produce separate defense and commercial businesses that often do not share technology. The procedures, policies, and management of large-scale systems in the military and civilian sectors diverge starting with requirements definition, continuing in the development or acquisition of software, and throughout the entire life cycle of the software. This restricts the flow of leading-edge technology from defense into the commercial sector and reduces DoD access to readily available commercial products. Most of the differences can be attributed to the policies, regulations, standards, and directives mandated by DoD. DoD software requirements are more rigid than their commercial counterparts. Defense systems tend to be overwhelmingly custom built, while commercial systems will use as much off-the-shelf technology as possible. Software companies are particularly concerned about data rights, which they see as critical to competitiveness. Companies are reluctant to deal under DoD restictions; in their eyes the government would be taking and possibly giving to their competitors the very basis of their business.

International Competitiveness and the Health of U.S. Industries

The Department of Defense has been concerned for some time about the implications for defense of deteriorating competitive positions of U.S. manufacturing companies in the international market.[20] The government is also concerned from a wider perspective that this trend is weakening and undermining the U.S. economy. DoD shares the concern that a weakening economy and a drain of resources into purchases of foreign goods will reduce money available to produce defense equipment, but its primary concern is the continuing availability of necessary items and technology.

The government does not as yet have a policy regarding dependence on foreign sources for defense material and technology, let alone a game plan for implementing such a policy. The Undersecretary of Defense for Acquisition has recommended a plan to bolster defense-related manufacturing in the United States.[21] The report detailing that plan does not make a statement on how much foreign dependence is tolerable, although it does imply that some is unavoidable.

The complexity of the problem is illustrated by the issue of cooperative development and production of defense equipment with the European NATO Allies. It has been long-standing U.S. policy to encourage multinational procurement of similar defense equipment to foster commonality, to get the best equipment into the forces of all the Allies, to save money, and recently, to exploit a broad multinational technology base. In recent years the Defense Department has made great progress in generating international memoranda of understanding for joint development, with the help of initiatives like the Nunn Amendment. But as the Europeans have become more interested in cooperative developments, they have also sought a greater share in generating the technology and a larger market share for their defense industries. Interest by U.S. companies in joint ventures with Europeans has been spurred, in part, by fears that several trends in European thinking could sharply curtail their sales in Europe. Thus, the cooperative programs are a two-edged sword helping U.S. sales in Europe while stimulating European sales to the United States; and helping U.S. defense policy in general, while both helping and hindering the maintenance of the U.S. defense industrial technology base. Crafting a workable policy will be a tricky job.

There are three basic policy choices:

- demand that anything that goes into defense equipment be built in the U.S. from U.S.-sourced components, taking whatever measures are necessary to ensure that all the necessary industries are alive and well in the United States;

---

[20] For examples, see Defense Science Board, "Report of the Defense Science Board Task Force on Defense Semiconductor Dependency," prepared for the Office of the Under Secretary of Defense for Acquisition, February 1987; Report to the Secretary of Defense by the Under Secretary for Acquisition, "Bolstering Defense Industrial Competitiveness: Preserving Our Heritage, the Industrial Base, Securing Our Future" (Washington, DC: Department of Defense, 1988); and Martin Libicki, *Industrial Strength Defense: A Disquisition on Manufacturing, Surge, and War* (Washington, DC: National Defense University, 1986). See also, U.S. Congress, Office of Technology Assessment, *Paying the Bill: Manufacturing and America's Trade Deficit*, OTA-ITE-390 (Springfield, VA: National Technical Information Service, June 1988).

[21] See "Bolstering Defense Industrial Competitiveness," op. cit., footnote 12.

- let the market dictate which industries will be healthy in the United States and look only for the best deals wherever they can be found worldwide; or
- choose some industries that have to be located in the United States, take appropriate measures to ensure that, and let the rest go with the market.

The first and third require some sort of intervention in the international economy, either supporting the international competitiveness of U.S. companies or protecting, supporting, and subsidizing U.S. companies that cannot otherwise survive. Another approach is to design nothing into U.S. defense systems that cannot be domestically sourced. But this cuts off a great deal of modern technology, a Western strength. In making these choices, the United States will have to decide how dependent we can afford to be, and how much independence we are willing to pay for. If the United States demands self-sufficiency without taking measures to keep U.S. companies alive and competitive, the list of technologies available for defense systems is likely to decrease as time goes on.

It will be necessary to decide how to treat dependence on various nations. There are significant differences in being dependent on Canada (already defined as part of the North American industrial base), Britain, our other NATO allies, Mexico, Japan, Korea, etc. U.S. and Canadian companies are closely intertwined. Despite the recent controversy over the trade agreement and other arguments, we are each other's largest trading partners. Canada is also a NATO ally with a common security interest. The chances of being cut off from Canadian sources either by policy or by hostile act are minimal. We are also close to our European Allies; much of our defense equipment is bought to defend them. But we are separated from Europe by an ocean, and they have not always supported U.S. military actions. Other nations are much less tightly tied to the United States.

The high-technology economy is an international one and responds to international market forces. These forces are likely to continue to move industries offshore despite U.S. efforts to will (or legislate) them to stay. In the vast majority of cases, defense business is far too small to provide the necessary clout, particularly when faced with other nations that manipulate their civilian markets to keep their companies healthy. Competition comes from Japan, the smaller Asian nations—Korea, Taiwan, Singapore, etc.—and Western Europe. The Europeans are taking dramatic steps to improve their international competitive position, particularly in high technology industries. These include the economic integration of the EC in 1992, and the funding and encouragement of large cooperative R&D projects.

Although all industries are different, the plight of the fiber optics industry is illustrative. While healthy in the United States, it faces increasingly stiff competition at home and continuing difficulties abroad stemming from limited access to foreign markets. Both the Europeans and the Japanese are making major pushes in fiber optics and photonics in general. U.S. technology and production costs are at least competitive. But while U.S. producers have been largely excluded from some important foreign markets, the U.S. market remains open to foreign vendors. Japanese companies can sell in foreign markets at low prices because their government has discouraged foreign competition in Japan where prices are kept artificially high. The closed domestic market supports overseas competitiveness.

The U.S. software industry faces a different sort of challenge. It is currently strong and competitive, but the rapid growth in worldwide demand for software threatens to outstrip the capacity of U.S. firms to meet it, leaving a large opening for foreign firms to penetrate the market. Japan, France, the United Kingdom, Korea, Singapore, Taiwan, and India have the capacity to penetrate the global market. And many of these nations have trade policies that either discourage sales by U.S. companies or fail to protect the intellectual property rights of those companies: "pirated" software is becoming a major problem. Moreover, the Japanese are making rapid strides in turning software design from art to manufacture, building software factories to increase productivity dramatically.

Internationalization of Industries

Efforts to protect and nurture U.S. companies will be complicated by trends toward internationalization in high-technology industries. Examples are found in the advanced composites industry in which many of the firms that appear to be American—because they have American names or U.S. facilities—are actually owned by foreign companies and in the fiber optics business where international joint ventures are used to get into otherwise closed markets. International ownership, vertical and horizontal integration, and international siting make it difficult to define in any convincing way what an American company is. Moreover, the sequence of steps that leads to a final product often crosses international boundaries many times and shifts as prices and availability of components shifts. Is a Pontiac built in Korea any more or less an American product than a Honda made in the United States or a Chevrolet/Toyota assembled in California from U.S. and Japanese parts?

Difficulties in identifying U.S. companies will produce difficulties in writing legislation to protect them or establishing DoD policy to encourage the growth of important domestic industries. Foreign plants owned by U.S companies, U.S. plants owned by foreign companies, joint ownership, and joint ventures all offer different sets of problems.

Formulating Policy

These trends toward internationalization will complicate difficult issues that Congress and the Administration are already facing. Paramount among these is to decide whether the U.S. Government will play a major role in encouraging and supporting U.S. commercial business and industry, or whether—almost unique among the governments of major nations—it will continue to remain more or less aloof, confining its activities to a few international trade negotiations. Other governments encourage the development of commercial technology and associated industry, help to foster a domestic situation conducive to growth, and support aggressive overseas marketing.

Having decided government's role, the next issue would be to define goals. These might include:

- keeping key nondefense manufacture and development in the United States,
- keeping manufacture and development in the hands of U.S.-based (or U.S.-owned) companies;
- preserving some portion of the U.S. market for U.S.-based (or U.S.-owned) companies; and
- gaining access to foreign markets for U.S. firms.

Defining such goals will entail arriving at a working definition of a U.S. company, or at least of how location and ownership affect U.S. national security interests.

It would be necessary to decide how large a role defense needs would play in deciding which industries are in need of government attention. This decision would have to balance the problems of foreign dependence against the risk of diminished access to foreign technology and manufacture. It would also have to consider how much the United States is willing to pay to buy domestically that which may be available at a lower price elsewhere. The lessons of "lowpriced oil" from the Persian Gulf are instructive here. Determining the acceptable degree of offshore dependence for defense equipment will necessitate deciding the level of componentry which DoD would have to specify as coming from domestic sources. For example, is it sufficient to require that systems or subsystems be domestically sourced, or does DoD have to assure that some or all of the components are made in the U.S.A.? This decision would dictate the level at which DoD would need visibility into the manufacturing process and have to keep a data base on suppliers.

Whatever the goals are, Congress will have to decide what levers can be pulled to make those attainable. In most cases, simply controlling defense procurement will not be enough to influence the industry: it may ultimately lead to an inefficient, backward, protected industry that is incapable of competing on the world market. Such an industry might only be capable of providing DoD with obsolete technology or overpriced products. The government has the option of getting more deeply involved in stimulating the development of technology for commercial ends, including making government R&D facilities more available and providing greater incentives for corporate investment. Yet another option is to formulate a strategy—as Japan and other nations have—for controlling access to critical U.S. commercial markets in order to preserve and support domestic industrial capabilities. A third policy lever that can be manipulated, but not totally controlled, is the cost and availability of capital for conducting R&D. Major technological developments are capital intensive, with costs measured in the hundreds of millions to billions of dollars. European and Japanese companies pay less to borrow money than do U.S. companies—far less in the case of the Japanese. This allows them to carry on more projects simultaneously, and to sell the resultant products at lower prices than those of their U.S. competitors, putting U.S. companies at a competitive disadvantage.

NOTE: Copies of the report "Holding the Edge: Maintaining the Defense Technology Base" can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325, GPO stock No. 052-003-01150-6.

Mr. Shaw. Our defense posture relies on designing defense equipment that is significantly superior in performance to that of any potential adversaries, and manufacturing and fielding it in sufficient quantities. Our ability to design and produce such equipment rests on a broad base of R&D, engineering, and manufacturing facilities in both the public and private sectors. Some of these are oriented primarily to defense work, but many, as we've heard here this morning, are not.

In our reports, OTA pointed out several problem areas and explored them in depth. There is a strong consensus on the nature of the problems of defense technology and defense manufacturing. Again, we've heard some of that already today. Since we released "Holding the Edge", events of great significance have occurred both domestically and internationally. These events have, by and large, served to bring the problems we identified into focus, and have made finding solutions both more urgent and more difficult.

The first set of problems we identified concerns the way that the Defense Department manages its technology base programs and the R&D centers that perform much of the work. I'm happy to say that in this area we have seen a lot of very significant progress. DoD has taken the first steps toward making this system more effective.

Other problems involve industry, where Government has influence, but not control. The Government can plan the type of defense industry it needs, but it cannot simply by funding and other decisions bring that industry into being.

Executives of large defense companies have told OTA that they no longer consider defense to be a good business. The events of the past year have clearly made it potentially much worse. If the government is to maintain the defense base it wants, it will have to find some way to influence corporate behavior to prevent the facilities it needs from falling victim to sell-offs or shut-downs. First, it's going to need some clear idea of what it wants.

A great deal of what ultimately winds up in defense systems originates with companies that do only a small part of their business in defense sales. Here we face the twin problems of keeping these companies interested in doing defense work, and maintaining their health in an atmosphere of intense international competition.

At this level, the civilian industrial base is the defense industrial base, and the general industrial problems are defense problems. DoD spending, measured in tens of billions of dollars, has little clout out of a total international market measured in trillions of dollars. If we are to maintain these companies, it will have to be done through mechanisms that support their competitive positions on the world market. As has been mentioned at least twice already this morning, on February 28th, OTA released its report called "Making Things Better: Competing in Manufacturing" and testified before this committee on the problems of U.S. manufacturing in the global marketplace.

Supporting U.S. companies, particularly large civilian manufacturers, is greatly complicated by the globalization of industries and of individual companies. Large companies operate on a global scale. Where they design, manufacture, and sell is dictated primarily by business conditions and not by national identification.

From the defense perspective, buying from foreign companies instead of domestic suppliers means dependence on foreign sources and potential vulnerability to denial of foreign supplies for any one of a variety of reasons.

As Senator Pressler mentioned, that holds true for raw materials as well as manufacturing.

While the logic seems clear enough, there are few hard data on foreign dependence and less on vulnerability.

While it would be preferable to have the best sources for everything be domestic, trying to force that situation can be counterproductive and costly. Ensuring that a particular procurement is from a specific domestic company can also ensure that that company is non-competitive on the international market and could result in our armed forces getting second-rate equipment. The guaranteed protected market provides disincentives to innovate or to be more efficient.

In some cases, subcontracts go to foreign suppliers even though they are not necessarily better qualified than U.S. competition. This can arise from the terms of sales by major U.S. defense corporations to foreign buyers. This situation pits the interests of the prime contractors against those of the supplier base, and we've heard some of that already this morning. National interest lies on both sides, since foreign sales help keep the large defense companies solvent. It is a complex situation that benefits some companies while disadvantaging others.

Certainly not all the lower tier suppliers are large manufacturers that do business on the global high technology market. Many are small to medium size companies with a substantial fraction of their business in defense. The challenge here will be to keep these companies financially solvent, while maintaining the necessary technological growth for defense purposes.

In conclusion, I observe that there are three types of defense companies we need to be concerned about—the large defense companies, international dual-use technology producers, and small to medium size companies that have an important niche in the defense market. There are therefore three sets of policies that have to be considered. And in all cases these policies are likely to have broad implications that extend beyond the defense market.

Thank you for your attention.

[The complete prepared statement of Alan Shaw follows:]

STATEMENT OF ALAN SHAW
Manager
International Security & Commerce Program
Office of Technology Assessment

Testimony Before

The Committee on Banking, Housing, and Urban Affairs
United States Senate

THE DEFENSE TECHNOLOGY BASE: INTRODUCTION & OVERVIEW

HOLDING THE EDGE: MAINTAINING THE DEFENSE TECHNOLOGY BASE

March 22, 1990

Mr. Chairman, thank you for this opportunity to testify on OTA's work on defense industry and technology. My remarks today will be based primarily on two published reports:

The Defense Technology Base: Introduction and Overview
and Holding the Edge: Maintaining the Defense Technology Base

updated with what we have learned since these reports were released. With your permission, I ask that the summary of Holding the Edge be entered into the record. Copies of both reports are available from OTA. Volume 2 of Holding the Edge, the detailed analytical work on which the report is based, is now being published and will soon be available from OTA.

Two basic premises underlie U.S. discussions of defense industry and technology. First, our defense posture relies on designing defense equipment that is significantly superior in performance to that of any potential adversaries, and manufacturing and fielding it in sufficient quantities while that technological lead persists. Second, our ability to design and produce such equipment rests on a broad base of R&D, engineering, and manufacturing facilities in both the public and private sectors. Some of these are oriented primarily to defense work, but many are not. Therefore, decisions made in a number of different policy arenas--by various federal agencies and congressional committees--affect defense production, while actions taken to improve defense manufacturing can, and do, have far-ranging consequences.

In our reports, OTA pointed out several problem areas and explored them in depth. Much of what we observed had been previously discussed in a long series of reports dating back to the 1950s, and has been repeated since--including earlier in this series of hearings--so it is fair to say that there is a strong consensus on the nature of the problems of defense technology and manufacturing. Since we released Holding the Edge, many events of great significance have occurred both domestically and internationally. These events have, by and large, served to bring the problems we identified into sharper focus, and have made finding solutions both more urgent and more difficult.

The first set of problems OTA identified concerns the way DoD manages its technology base programs and the R&D centers that perform much of the work. In the past several months, DoD has taken the first significant steps toward making this system more effective, partially through Congressional prodding and partially on its own initiative. Of all the technology and manufacturing problems, these are perhaps the easiest to solve, because the programs and institutions are funded and managed by the government and are under its direct control.

The other problems involve industry, where government has influence, but not control. The government has a great deal of leverage over companies that do a major share of their business building defense equipment (or supplying those companies that do), but it cannot make business decisions for them. It can only provide incentives that heavily influence corporate actions. The government can plan the type of defense industry it needs, but cannot--simply by funding and other decisions--bring that industry into being.

Corporate executives have told OTA that they no longer consider defense to be a good business. The events of the past year have clearly made it worse. Large procurement budget cuts--in the offing for several years--are now accepted as inevitable. This has led to companies writing off large investments in programs that began in the heady days of defense build up, but have now been canceled. Stock prices and bond ratings have fallen, making it more difficult for companies to absorb the losses. If the government is to maintain the defense base it wants, it will have to find some way to influence corporate behavior to prevent the facilities it needs from falling victim to sell-offs or shutting down. But first it will need some clear idea of what it wants.

The major tools at the government's disposal are defense spending and defense procurement policy. But these diminish in clout as the share of a company's business represented by defense sales declines. S.1379 defines a defense contractor as "any person who enters into a contract with the United

States to furnish materials, industrial resources, or a critical technology, or to perform services for the national defense." This definition doesn't distinguish between a company that does 90% of its business in defense sales, and one that does only 1%. Both of these, and many in between, are vital to defense development and production. DoD has a great deal of leverage over the former, almost none over the latter.

A great deal of what ultimately winds up in defense systems originates with companies that do only a small part of their business in defense sales. Here we face the twin problems of keeping these companies interested in doing defense work, and maintaining their health in an atmosphere of intense international competition. If these suppliers are to stay available, a different set of government tools must be applied. Guaranteeing these firms a defense market will be meaningless if that market is only a few percent of their sales. This is especially true if it is the large civilian sales that bankroll the innovation that produces the technology that DoD needs. And if procurement rules are onerous enough, even a guaranteed market may not be sufficient to induce them to do defense work.

At this level, the civilian industrial base _is_ the defense industrial base, and the general industrial problems are defense problems. DoD spending, measured in tens of billions of dollars, has little clout out of a total market measured in trillions. If we are to maintain these companies, it will have to be done through mechanisms that support their competitive positions on the world market. On February 28 OTA released its report Making Things Better: Competing in Manufacturing and testified before this committee on the problems of U.S. manufacturing in the global marketplace.

Supporting U.S. companies--particularly large civilian manufacturers--is greatly complicated by the globalization of industries and of individual companies. In the past, it was relatively easy to define and identify a U.S. company: it was headquartered in the U.S., did most of its designing, manufacturing and selling in the U.S., and--despite possible foreign offices, sales, and investments--identified with and shared interests with the U.S. Now companies operate on a global scale. Where they design, manufacture, and sell is dictated primarily by business conditions, not national identification. A U.S. logo could carry with it very little U.S. ownership, and no domestic manufacturing. It could be an asset bought by foreign investors simply to gain entry into the U.S. market (particularly the defense market) for products that originate elsewhere.

In this regard, the definition of "domestic source" in S.1379 is ambiguous. It can be read as either: (1) a firm that is primarily a defense contractor and operates in the U.S. and/or Canada; or (2) a company that does most of its defense work in the U.S. or Canada, regardless of where it does its other work. The first interpretation would appear to exclude U.S. companies that are primarily civil manufacturers from qualifying as domestic sources. IBM and GE could be excluded under this definition. The second would include large foreign manufacturers that do a little defense manufacturing for DoD. They could do the R&D (which is much of what really counts) elsewhere, and qualify as domestic sources by having their defense production plant here.

From the defense perspective, buying from foreign companies instead of domestic suppliers means dependence on foreign sources and potential vulnerability to denial of foreign supplies for any one of a variety of reasons. While the logic seems clear enough, there are few hard data on foreign dependence and less on vulnerability. (Hopefully, the process of accumulating a data base will get moving under the terms of last year's Defense Authorization Act.) To complicate matters, there is a "flip side" to foreign dependence: exploiting foreign sources means access to foreign technology that may be better than what is available domestically.

However we view it, foreign sourcing is a sign of the erosion of domestic sources (although far from an unambiguous sign of disaster). But what is cause and what is effect? Does the presence of foreign sources cause the erosion of domestic producers, or is it a manifestation of the decline in domestic industry? The answer is often both: DoD may use foreign sources because adequate domestic sources are not available, but buying from foreign sources then contributes to their competitive position.

While it would be preferable to have the best sources for everything be domestic, trying to force that situation can be counterproductive and costly. Ensuring that a particular procurement is from a specific domestic company can also ensure that that company is non-competitive on the international market and may result in our Armed Forces getting second rate equipment. The guaranteed protected market provides disincentives to innovate or be more efficient.

In some cases sub-contracts go to foreign suppliers even though they are not necessarily better qualified than U.S. competition. This can arise from the terms of sales by major U.S. defense corporations to foreign buyers: if you want the sale to country X, guarantee a certain amount of business to companies based in that country. This situation pits the interests of the prime contractors against those of the supplier base. And national interest lies on both sides, since foreign sales help keep the large defense companies solvent. Moreover, foreign sales don't always mean lost business for the lower tier U.S. suppliers. It can mean sales that otherwise would not have occurred. It is a complex situation that benefits some companies while disadvantaging others.

Certainly not all the lower tier suppliers are large manufacturers that do business on the global high technology market. Many are small- to medium-size companies with a substantial fraction of their business in defense. These companies can get squeezed as their principal customers--the large prime contractors--make deals. The challenge here is to keep these companies financially solvent, while maintaining the necessary technological growth for defense purposes.

In conclusion, I observe that there are three types of defense companies we need to be concerned about--large defense companies, international dual-use technology producers, and small to medium size companies that have an important niche in the defense market. There are therefore three sets of policies that have to be considered. And in all cases these policies are likely to have broad implications that extend beyond the defense market.

Thank you for your attention.

In this addendum to my statement, I address the four questions contained in your letter of invitation to testify. These answers are based on OTA analysis, and are not statements of personal opinion.

1. Is the current system for gathering and assessing data on the extent of foreign dependence among prime contractors and subcontractors of defense materials adequate?

OTA has searched long and hard for data on foreign content in defense systems. While there is much anecdotal information and opinion about foreign dependence, there are, in our experience, surprisingly few hard data to back it up. There is also little in the way of accumulated data bases on which to base any broad picture. Our sources include executives of large corporations who are sure that foreign content is so pervasive that it would be futile to try to eliminate it, as well as laboratory and project personnel who claim that some programs just wouldn't work without foreign technology.

The only deep analytical assessment I am aware of was done a few years ago at the National Defense University. It is limited to a few systems. We have queried several large prime contractors and found them unable (perhaps unwilling, but most likely unable) to provide data on foreign content of specific systems.

One reason this is so is that high technology components, pervasive in defense systems, are quite often commodities on the international market. For example, the chips that go inside the cans that are attached to the circuit boards that form the basic circuitry of just about everything that processes data come from a variety of sources on the international market. Lots are bought from several suppliers and mixed. It is very difficult for the radar processor manufacturer to know where the chips come from.

Moreover, even if we knew the company that sold the chip, we wouldn't necessarily know where it was made. And if we knew where it was made we might not be able to say unambiguously whether it was domestic or foreign. It could, for example, be manufactured by a U.S. company in Mexico of U.S. design (or Taiwanese design), or could be manufactured in the U.S. by a Japanese company.

2. Might foreign firms become the sole source of certain equipment or technology vital for national defense?

This is a distinct possibility. It is precisely fear of this happening in the vital and pervasive area of semiconductors that led to the Defense Science Board report on that topic. In our analysis we looked in some detail at the advanced composites industry. Advanced composites are a major new materials technology, and the industry currently sells primarily to defense companies. But a large number of the companies in the market here are, in fact, foreign companies.

3. Can the government foster the development of domestic defense-related technology directly through funding programs, or indirectly through encouraging industrial cooperation?

This is a very complicated question. The government does foster domestic defense technology directly through funding programs now, and in a major way: this is what DoD's technology base programs primarily are. This will work, and has worked in the past, in the development of technologies that only defense is interested in. It is probably the best way to encourage the development of "leading edge" technologies. But direct funding works less well in the case of technologies for which there is a civilian market and international industrial competition. Again, semiconductors provides a good example. The amount of money DoD can allocate to these developments is not large compared to what the industry puts in worldwide. So DoD won't swing the balance.

But DoD can skew the efforts of U.S. companies, and that may be ultimately counterproductive. The example usually cited is that of numerically controlled machine tools, which DoD funding started. However, DoD funding later led U.S. manufacturers away from competitive developments and in directions dictated by military programs.

This said, DoD often does have special needs, and has to stimulate the technology to meet those needs. Radiation-hardened microchips are an example. But DoD often sets standards different from those of the commercial markets for items that otherwise could be common between the two. In this case, building to DoD standards undermines competitive position and ultimately erodes the base.

Joint programs, as encouraged in S. 1379, constitute a mechanism that has gained much favor recently. From the government's perspective, it is a way to get companies to pool resources in the pre-competitive stage rather than duplicate work and waste their assets in needless competition. It is what is done by the competition in other nations. The unanswered question is whether it would work among U.S. companies.

4. Are the current mechanisms for transferring high technology defense research into civilian applications adequate?

OTA has not examined this question.

The CHAIRMAN. Very good. Senator D'Amato has joined us. Senator D'Amato, did you have a comment to make?

Senator D'AMATO. Mr. Chairman, I'd just simply like to submit a statement for the record as if read in its entirety.

The CHAIRMAN. We will make it part of the record.

Senator D'AMATO. Thank you, Mr. Chairman.

[Committee insert of Senator D'Amato's opening statement follows:]

STATEMENT BY SENATOR ALFONSE D'AMATO

Senator D'AMATO. Mr. Chairman, today, the committee continues its consideration of S. 1379, th Defense Production Act Amendments of 1989, a measure designed to arrest the erosion of the critical defense industrial base of the United States.

The committee has received testimony from numerous witnesses who have painfully and poignantly dramatized the problems this country faces in maintaining its ability to provide a sustained and sustainable industrial base. It is a fact that America must maintain certain domestic manufacturing and industrial capabilities if she is to assure a vigorous, independent defense posture. While no one suggests it is an easy task, we all agree that it is a task we must undertake.

Who can imagine an America without shipyards, an America without ball bearing plants, and an America without a machine tool industry? What kind of country would allow itself to become dependent on overseas suppliers to provide for the first responsibility of government—the common defense, or to allow her capacity to modernize to be held hostage? And how can we as Members of Congress permit the United States to sink from great power to paper tiger? It is inescapable—America's manifest destiny is at risk.

Let me thank Chairman Reigle for scheduling these hearings and Senator Dixon for his stewardship of this measure. I look forward to hearing the testimony of today's witnesses.

Thank you, Mr. Chairman.

The CHAIRMAN. Let us start down through here. Mr. Koontz, you mentioned that Japan has initiated a billion dollar research effort to develop new manufacturing computer-controlled technology.

How extensive is the Japanese Government financial assistance to manufacturing R&D and how does it compare with the U.S. Government's efforts?

Mr. KOONTZ. Well, on the last question, we have made a report, the National Center for Manufacturing Sciences, related to what Japan spends and I just got this by way of fax to get the actual facts. They spend somewhere in the area of $87.6 billion on nonmilitary R&D tools and industrial equipment.

This came out of an interpreted Japanese passage called "Basic Research Facilitation Law of 1985" as to what they were going to do relative to key technologies. It goes on about low-interest loans and whatever. We have submitted that to one of your staff, so this is on the record.

The CHAIRMAN. How do we look by comparison?

Mr. **Koontz**. As far as direct dollars that I am aware of that is directly oriented towards manufacturing technology in the Defense Department for manufacturing facilities—facilities meaning machines, tools, whatever it might be—new process—is from the ManTech program, which is about $200 million, which is actually peanuts as compared to Japan.

The **Chairman**. $200 million would not even—it's hardly even a measurable fraction of the $87.6 billion. That's for civilian R&D in Japan?

Mr. **Koontz**. That is just civilian. What they do militarily, I don't know. They don't do much militarily.

The **Chairman**. Yes. They get us to do it and then we get into sharing arrangements, and as a result they get R&D information at a lower cost on the learning curve. We do the frontend work and they get the ride on the technology.

Mr. **Koontz**. You asked me the other question about this intelligent manufacturing. There is a petition going around in the United States from Japan, who is getting all of our industries excited, about that they would put a billion dollars up to get involved in an intelligent manufacturing system program whereby we supply the know-how and/or the facilities and, of course, they reap the results. This is one area where we still dominate, this intelligent manufacturing, whether it be software or whatever.

I, obviously, am not in agreement to that at all, that we should get involved in those kinds of things, because the money side of it is the cheap side. Giving up our know-how and last stronghold should not be done.

The **Chairman**. Let me ask you, on page 3 of your testimony, as a follow-up to that, you express concerns about our growing dependency on foreign products to meet critical defense needs and you state the following:

> It was just about a year ago when Hitachi purchased Ceraclad Corporation. Ceraclad was a critical supplier of advanced, fourth generation ceramic chip carrier technology to the Department of Defense. This is integral to our avionics needs. Since the purchase, Hitachi has transferred all intellectual property, know-how, etc., to Japan and shut down Ceraclad.

That's a pretty powerful illustration. Do you have any knowledge whether that sort of purchase and transfer of technology out of the country is occurring frequently?

Mr. **Koontz**. That's the one obviously that I can point to which was written about in the "New Technology Week" of an example. Obviously, in my own industry, I believe this to be going on. Obviously, the Japanese are buying American machine tool companies and/or actually establishing plants in this country which in essence is okay, but obviously the idea of it is is to gather what technology is left, going back even to the program I just talked about—they are offering a billion dollars, which sounds fine. We ought to take that billion, but what they really want is our intelligence manufacturing capability, which is the last stronghold of this country.

So there are a couple of examples, but to say for a fact—this one is for a fact, it's printed, and I believe you do have a copy for the record.

The **Chairman**. Just finally in that area, do you think the Exon-Florio provisions of the DPA need to be amended in any way?

Mr. **Koontz**. At this point, I am not familiar enough to answer that question.

The **Chairman**. OK. If you or the others could take a look at that, if there are any suggestions to be made in that area, that would be helpful to us.

Let me yield to Senator Heinz now.

Senator **Heinz**. Mr. Chairman, thank you.

One of the issues that we are addressing here is the transfer of technology by what you might call artificial means abroad. There are a lot of ways of having that happen. It was the centerpiece of the FSX and the Korean fighter program debate where Korea in the latter program this finally required or demanded a very, very large offset. Many of us in Congress objected to that. The Department of Commerce and the Department of Defense got deeply involved, and it was substantially reduced.

A general question. Are the kinds of offsets that foreign governments, directly or indirectly try to levy on you, particularly as a prime contractor—Mr. Paul and Mr. Koontz—are those a problem?

Mr. **Paul**. Well, I think, Senator, that there are times when offsets do pose some problems. There's no question about it. I think that the effects that we had in getting the requirements reduced in Korea were helpful.

Where there are only United States contractors competing in a country, we have the ability to use leverage to drop and drive those requirements down. It's kind of a marketplace issue. But when we are up against foreign competition, let's say for example, the French or someone else, in such a competition, the market forces do take place.

Senator **Heinz**. What you're saying is that the French can cut you out by cutting a deal?

Mr. **Paul**. That's right. Now take the case, for example, as we face in the aerospace industry, as I said earlier in my testimony, we have 1.3 million people in our industry. We talk about work forces, but here's a work force that's highly trained in high technology. If it drops off because of the defense spending, we want to fill that gap and there will be a tendency to fill that gap with more trade. We have to find the market forces that allow us to get more than we give and that's almost on a case-by-case basis.

Senator **Heinz**. Mr. Koontz, do you have anything to add or do you substantially agree with Mr. Paul?

Mr. **Koontz**. No, I do not have any personal experience with any negative effects of offsets.

Senator **Heinz**. Mr. Dudon, do you have any experience with this issue?

Mr. **Dudon**. No, not at all. We are a small manufacturer and we don't deal overseas as far as offsets, but I do know the offsets directly affect us as a small business. We lose a lot of business because of that.

Senator **Heinz**. I'm going to have a question for you on that in a second.

I gather the position, Mr. Paul, that AIA would have is you would favor multilateral negotiations on the issue of offsets with our NATO allies?

Mr. **Paul**. Let me just say that depending on what happens is, if we could all collectively find some way in which offsets were going to be dropped, I think everyone would feel a lot better about it. But I don't believe that any thoughtful people who have dealt in this issue as I have for so many years believes there's any prayer of a chance of that working.

Senator **Heinz**. Do we know that? Has anyone ever tried to raise it?

Mr. **Paul**. Yes. I think that there's a great deal of effort that has gone on to try to jawbone, if you will, or try to find ways of having multilateral agreements, but——

Senator **Heinz**. By whom, when?

Mr. **Paul**. By members of our Defense Department going abroad and having collective discussions. But I'm not sure that there is a formal——

Senator **Heinz**. May I give you a different impression? It's been my impression that our Defense Department is often so interested—and this is going back over the last 10 or 15 years—in trying to persuade our NATO allies to buy an American piece of equipment for NATO and all NATO forces that they agree to anything in the way of offsets to accomplish what to them is kind of a standardization and prestige kind of goal.

Mr. **Paul**. I haven't quite seen that in the last few years, Senator.

Senator **Heinz**. But over the last 10 or 15 years, I think you would admit that it certainly was there.

Mr. **Paul**. Perhaps, but I think the situation we find ourselves today in is wishing that we could get even more involved with the government to support our exports rather than less.

Senator **Heinz**. Let me ask Mr. Dudon. The prime contractors obviously end up with the prime contracts. The subcontractors, such as yourself, end up with the smaller subcontracts and, in a sense, the prime contractors are somewhere between conflicted or really not particularly concerned with the kinds of effects that offsets have on subcontractors. If they simply have an effect on prime contractors, I imagine they're quite concerned.

Could you tell us a little bit about the extent to which offsets which might cost subcontractors jobs and technology and even their survival are a problem?

Mr. **Dudon**. Well, first of all, I don't get to deal with the prime contractors directly, the gentlemen who are negotiating the contract, but I really think they feel the offsets are hurting small business. I don't think they go into this trying to give things away just because they want to give them away. And I understand that they want to sell. Everybody wants to get that order and they want to get working. A lot of jobs depend upon that. But by them giving away so much—and a lot of that is the work that small subcontractors as myself or the other 3200 members of the National Tooling and Machining Association are involved in—is making our industry erode away. We are losing technology. We are losing skills.

People are not entering into the business because new jobs are not being created. They are being moved overseas.

Senator HEINZ. Let me ask Mr. Paul and Mr. Koontz if they agree with that statement.

Mr. PAUL. I think that there are clearly some cases where——

Senator HEINZ. He's not saying some cases. He's saying there's a lot of it going on. He's saying there's a trend. He's saying it's a problem, and you deal with all kinds of subcontractors, so you are an authoritative person and so I would appreciate the most authoritatively possible answer, not just a "Well, once in a while here and there."

Mr. PAUL. That's right and that's what I'm trying to say, Senator. Actually, in my experiences, extending over 20 years with international trade, it is some cases; not most cases. And in fact, what really ends up happening in this business is that what we really usually give away is the production line. If you look at what in fact the contractor has, he has 50 percent of his business is subcontractors and what ends up happening is that most of the work is not given away. What's given away usually is assembly work on the production line because it's easily transferring tools and so on.

I'm not saying that in some cases they don't get hurt. They do. It's a very complex issue. But it really hits the primes as hard as anyone.

Senator HEINZ. Mr. Dudon, how would you react to what Mr. Paul said? It's a pretty interesting debate. I thank you both for being here.

Mr. DUDON. If they are giving away in fact assembly work, then that is directly affecting the members of the National Tooling and Machining Association because there are members who are involved in assembling aerospace parts. So those are the kinds of things that are being sent overseas and it is costing jobs.

Senator HEINZ. So what that affects are the people who supply the machines to the assembly shops. Is that what you're saying?

Mr. DUDON. Well, the way I understand it is that the parts are being put together over there. The parts still might be manufactured here, but they are being assembled over in Turkey or wherever that might be, and there are companies here in the United States that specialize in just assembling parts.

Senator HEINZ. Mr. Koontz, you've been lucky. You stay out of the line of fire here. Do you want to add anything?

Mr. KOONTZ. I agree with both of them. In some instances, yes, such as tools and dies, there's no doubt they get hurt. Every time we lose one percentage of market share that was in the United States and goes overseas, you are applying one more nail in the coffin of small business in the United States because they cannot react to the markets over there, especially in Japan who has a closed market in general, or small tool shops or machine tools or whatever it might be, and/or it's very expensive to go over there to counteract these kinds of businesses.

Fifty percent of my own business now depends on Korea and China and I can tell you it's a lot more expensive to operate over there than it was going to Detroit. Not that I mind going, but it's a lot more expensive to operate. But we have had to do it and are doing it, so in essence, some of it is being done. In his case, I would say tools and dies, they are in trouble because they are very labor intensive and once someone has the technology on how to manufacture a mold or die. So in his case, he's right.

Senator HEINZ. I thank you. My time has expired.

The CHAIRMAN. Senator Shelby.

Senator SHELBY. Thank you, Mr. Chairman.

How important is the cost of capital to you and the differential between what you pay for capital versus what the Japanese are paying, the Koreans, and the Common Market people? Mr. Koontz, do you want to comment?

Mr. KOONTZ. Sure, I'll comment. I don't know that it's—I've seen some debates here recently that the cost of capital is not all that much greater here in the United States than it is in Japan. I think it's really the lack of capital, not what it costs.

This same article I was referring to, the Ernst & Young survey, actually went down a little further, which I didn't have time to comment on. It says that all small businesses, whatever small business is, needs another $3 million, each business, in order to just operate in the next 5 years, let alone do any meaningful technological research.

Senator SHELBY. Let's pick up on the term "lack of capital" now. If capital is available in the international marketplace, what do you mean by "lack of capital?" Do you mean that the lenders aren't loaning to small business because there's a risk there or what?

Mr. KOONTZ. I think you could say that at the present time. It's very difficult for a small business, as you know, with the banking problems—and you're the experts at that—they are going to look very closely at any business that's lost money in the last 5 years or 1 or 2 years, and you can pretty much bet that nine out of ten small businesses have lost money in the last 5 years. So basically, they are not getting it.

I really want to elaborate that lack of capital thing. Also with a lack of market share, margins have been small and so there isn't any extra surplus capital to do any risk research, which I find myself in that case.

Considering my business, we've been a successful company. I haven't lost money in 33 years. The margins I'm making in the last—since 1933, to be exact—with the margins I'm making today, I'm not about to take—you say, well, it's a little amount—but a $3 million or $4 million or $5 million risk to build a new machine that I'm not sure I can capture the market or whether or not I'm going to be outflanked by a foreign competitor. So I won't take that risk. I will go to a foreigner and try to get cheap technology by buying it from the Germans.

One point on what's happening here which scares me, I buy the technology from the Germans, import the iron, and I say I'm going to Americanize it. How am I going to Americanize it? I'm going to put on a Japanese control drive or whatever, but I'm not so sure what I'm doing any more basically because the whole machine ends up being a German-Japanese machine basically, with me only taking the risk in the middle of marketing it and trying to sell it.

Senator SHELBY. Of course, they are playing by different rules as far as our antitrust laws are concerned, aren't they, both in Japan and in the Common Market?

Mr. KOONTZ. That's what I'm saying. It's the lack of capital, that I can't take the risk any longer. I've got to join forces with foreign competitors to do what I have to do.

Senator SHELBY. How important is it for us to relax the antitrust requirements that are out there, or restrictions I should say?

Mr. KOONTZ. I think it's very important. That's the only answer. Part of my answer was that we are migrating towards consortia in one way or the other and that's going to be the way of the future. Our competitors are using that, Japan and Germany. Both are well-founded in the areas of cooperation and collaboration and we sit here with a bunch of "mom and pop" shops operating independently, fighting amongst ourselves basically, whether it be companies and/or government and industry, and waiting for the second shoe to drop. It's got to change.

It is changing. Some 150 consortiums have put together their act recently and you're talking about the IBM buying—that's a great thing for that to have happened. They saved that company in some form or the other—not the company, but the technology. So that trend has to be continued. It has to be fostered and it needs money, with the long term being that we're going to save money because what we're really saying is that the Government will have to put some seed money up, but in the long term we are going to try to find a way of jointly spending private money, Government money, and then leveraging that into other monies, depending on the project, in a four or five-fold way and still maintaining our defense and national security capability but really reducing costs in the long run. We've got to reserve our capital.

Senator SHELBY. Dr. Shaw, do you want to comment?

Mr. SHAW. On which one?

Senator SHELBY. On the capital requirement.

Mr. SHAW. As Mr. Koontz was answering the question——

Senator SHELBY. The cost of capital here versus Japan or the Common Market.

Mr. SHAW. Yes. I opened up to the relevant part of "Making Things Better." I didn't write this report, but I think it does a very good job of discussing the whole issue of the cost of capital and the availability of capital which are, of course, tied together.

Not only is there more capital available in Japan than there is in the United States for investment——

Senator SHELBY. But at a lower cost.

Mr. SHAW. It's at a lower cost because there is more available and because the Government has policies specifically oriented toward making it available to companies. That's the key point and that's where the availability and the cost tie together.

Senator SHELBY. So it's earmarked for the company then?

Mr. SHAW. Yes.

Senator SHELBY. Set aside. How much of the machine tool business—I guess that's what I would call it—have we lost to foreign competition in the last 10 years in the United States? You were talking about buying a German machine and then part of it from Japan. What percentage of our machine tools are we importing?

Mr. KOONTZ. Well, at present machine tools are made up of two different sectors, one being the standard machine tool area which is what I call the parts the defense industry uses more of—the NC machining centers, lathes, other various things we call machine tools. I'd say we've lost 85 to 90 percent of that business and the trend is down.

Senator SHELBY. Who to? The Germans?

Mr. KOONTZ. Mostly it's Japan, but it's a combination. It could be anybody in the future. Korea is beginning to make inroads. You're seeing machine tools. Undoubtedly, we are going to get just swamped by the Eastern bloc now that they have opened their markets because they have some good machine tools obviously in East Germany, Hungary, Czechoslovakia. The basis of their economy has been machine tools. A lot of it has been machine tools. We're going to get swamped.

Senator SHELBY. How do we break the cycle, though? What comes first? You start depending on a foreign source, either as a subcontractor that makes a part or makes a whole machine, and then this puts somebody else out of business here. They're not able to compete. They are not getting the business. They don't have the research. They don't have the money. What happens? Isn't it a snowball effect?

Mr. KOONTZ. Well, without making a drastic change in the way we develop technology or advance the development of technology to stay at least a step ahead is our only answer in saying we can offer both right here in the country a two-year lead in advanced technology products, there's no hope because our products begin to look just like theirs if we're not moving ahead, at least 2 years ahead.

Senator SHELBY. We're behind the curve and we will stay behind the curve?

Mr. KOONTZ. Absolutely. And the only way to come out of that with lack of capital is consortia, and that's what the National Center for Manufacturing Sciences is all about, to try to keep a 2-year lead. We've got some good programs going. We've got the next generation controller going with some Man-Tech money and private money and public money. That's to try to overcome the Fanic world class controller, which is dominating the world today. We've got some projects going on distributed lasers. Many projects that if and when they are pushed forward, with the amount of money, we can again reach a point where we are 2 years ahead of the competition.

Senator SHELBY. Mr. Paul, you haven't had a chance to comment. Mr. Chairman, would you let him comment?

The CHAIRMAN. Take your time. This is a very important line of questioning.

Mr. PAUL. Senator Shelby, I think you've hit on a very crucial point on the cost of capital issue.

The cost of capital—in fact, if you really step back, the biggest problem I believe we face in the aerospace industry is that we are now in more debt than we've ever been before. The ratio of debt to equity in the aerospace industry——

Senator SHELBY. In more debt and in a shrinking market, too.

Mr. PAUL. That's right. So if you find yourself in a position where now you're consuming cash rather than producing cash, you now are in a problem of not being able to invest in yourself. It's cash that's important.

Now if you have to then go out and find capital and compete abroad, there's absolutely no question that our cost of capital is far greater than the cost of capital to anyone else abroad—I shouldn't say anyone else—at least the combined Europe and Japan.

The other part of that issue is, if you look at particularly defense products, if you want to export defense products, you cannot find favorable financing guarantees that allow you to compete in that regard.

So I think the capital issue is going to be the lead issue we are going to be facing.

Senator SHELBY. Mr. Dudon, you have not had a chance to comment. You're a small businessman and you know what the cost of capital is. You know the problems of the antitrust restrictions. Do you want to comment?

Mr. DUDON. Yes. I agree with what Mr. Paul said. The capital is available. The ability to pay it back is the problem. You can get the money, but you just don't have the money to pay it back.

When it comes to the antitrust laws, I've said this many times, for years we had grocery stores on everyone's corner but the grocery stores have disappeared. We used to have a little drugstore on all the corners where you could go buy your prescriptions. They have disappeared. The small town bank has disappeared. They have all been gobbled up. The small go away. The big get bigger.

The same thing is going to happen to the tool shops. We need help because we're going to either get gobbled up or we're going to disappear.

Senator SHELBY. Thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. It's a very important line of questioning. This cost of capital issue is a very complex one because I hear you saying, Mr. Dudon, that you get the money but you can't pay it back. Of course, if you take that around the cycle, it doesn't take too many people who get it and can't pay it back before the lenders then say on the next go-around, "Sorry, we're not going to lend you the money." As Senator Shelby says, you've got shrinking market demand now for some of these products because of the squeeze that's on and the change that's taking place.

It leads me, Senator Shelby, to the view that we need to think in terms of a sort of team strategy. The United States in years past really prospered because we had this wide open competitive market situation, whether it was a grocery store on every corner or a pharmacist everywhere.

Senator SHELBY. Mr. Chairman, if I could interject, if you would yield, we were a creditor nation and we had our own capital.

The CHAIRMAN. That's exactly right. And we were in great shape. We were in great shape in terms of financial resources and we had a bounty of other resources. We had oil. We had natural gas. We had plenty of land. We didn't get devastated during the war. Other countries did. We had a good public education system for a long period of time. We had a wonderful entrepreneurial system so that firms like yours, Mr. Dudon, in Dayton and all over this country were able to spring up and do things, and we got the wonderful benefits of the competition and the diversity and the entrepreneurial drive. And that's still a central part of our success today and our success in the future.

But now the global economy is matching us up against other kinds of teams. So now what's happening is sort of "Team America" is going down the field against "Team Japan" and "Team Europe" and "Team Taiwan" and "Team Korea". That's a different ballgame. The rules of that game aren't working so well with respect to us. The trade accounts show it. The theft of technology and the violation of our patent rights show it.

So we've got to develop some streamlined thinking. We've got to have consortia arrangements. Government and business and labor have to form honest-to-God partnerships. We've got to think as a team, work as a team. We've got to make a series of structural adjustments I think with respect to cost of capital and other things that can really give us the input side of the strength so we can go out and be innovative and really challenge these international competitors.

The idea that we can do it without a plan, without talking with each other, without having some kind of a national scope to this, is nonsense. We can't do that because that's not what we are matched against. We are matched against national strategies from abroad and the notion that we're going to be able to meet that, with the absence of a national strategy in this country, despite our history, is just nonsense. The numbers show that doesn't work.

So in terms of the trade and debtor nation circumstances that Senator Shelby points out, we have got to find a way, without abandoning that entrepreneurial spark and that competitive advantage and all the benefits that provides. We've got to find a way to really consolidate our strength and pick targets. This isn't picking winners and losers. It's picking targets of areas where we want to excel as a nation and then really focusing our efforts there and working with one another and then we can get there.

I think we are in an international economic war in effect. It's a different kind of a war than the one we faced in the 1940's and late 1930's, but in a sense it's more difficult because WW II is an easier one to understand. With this one we tend to sleep a lot longer before we figure out that we're in an eroding position.

I've got a number of questions. I'm going to go back to Senator Heinz and then I'll take my questions at the end.

Senator HEINZ. I just have a very brief question, Mr. Chairman.

This is for Mr. Paul. Mr. Paul, earlier I was asking you about the extent to which offsets were a problem, and you indicated, in effect, only sporadically or once in a while and that it was mainly a question of assembly.

I've got here some statistics from the Executive Office of the President. I guess they come from OMB. They are entitled "Offsets and Military Exports, December 1988." It has entries for co-production, license production, and subcontractor production under direct offsets; and under indirect offsets the same kind of entries.

As I understand what you've said, co-production, which is the assembly, is the problem. Is that right?

Mr. PAUL. Yes. That is the major source of offset arrangements.

Senator HEINZ. According to this report, it is a major source of offsets, but it is by no means the most important. According to this report in 1987, which appears to be a reasonably representative year, there was roughly $242 million of offsets due to co-production. But there was nearly twice that amount, $402 million, in subcontractor production. And as to indirect offsets, there was nearly four times the co-production amount, $878 million.

Now what that suggests to me is that subcontractor production offsets are a huge problem compared to the assembly operations that you said were the main problem.

How do you account for that discrepancy?

Mr. PAUL. That surprises me, sir. As far as the indirect side, of course, we were just referring to the direct side.

Senator HEINZ. Well, let's just talk about the direct side. By the way, that's been a pattern all along for the last 5 or 6 years.

Mr. PAUL. What I'm speaking to is the aerospace industry. As far as the aerospace industry, I would be extremely surprised if that was the ratio. I would have thought that that was substantially reversed in the case of us. There are some different definitions of subcontractors.

Senator HEINZ. I don't have the breakdown, but my guess would be that an awful lot of this would be aerospace.

Mr. PAUL. Well, maybe we'd like to respond to that and have that study and take a look at that.

Senator HEINZ. Would you?

Mr. PAUL. Yes.

Senator HEINZ. This is a public document.

Mr. PAUL. Absolutely. We would like to.

Senator HEINZ. We would appreciate your evaluation of it. Let's find out whether that would cause you to change your observations.

Mr. PAUL. We would be pleased to.

[The following material was subsequently submitted for the record:]

UNITED
TECHNOLOGIES

Suite 700
1825 Eye Street, N.W.
Washington, D.C. 20006
202/785-7400, 785-7463

William F. Paul
Senior Vice President
Washington

April 10, 1990

Honorable Donald W. Reigle, Jr.
Chairman
Committee on Banking, Housing and
Urban Affairs
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman,

I am submitting this letter in response to the Committee's request for further information in reply to a question asked of me by Senator John Heinz at the Committee's hearing on the Reauthorization of the Defense Production Act, held March 22.

Senator Heinz asked that I explain an apparent discrepancy between data reported in OMB's 1988 Report on Offsets in Military Exports and my remarks to the effect that the larger part of offsets involved assembly work transferred overseas by the original prime contractor.

As I indicated in my response to Senator Heinz at the hearing, "There are some different definitions of subcontractors." (Transcript at p.60.) The OMB Report bears this out. The data referred to by Senator Heinz in his question appears in Table 8 at page 18 of the report. Under the heading "Direct Offsets" are several categories, including "Coproduction", "Licensed Production", and "Subcontractor Production". These categories are defined in the Report on pages 3 and 4.

The definitions given are as follows:

"Coproduction -- Overseas production based upon government-to-government agreement that permits a foreign government(s) or producer(s) to acquire the technical information to manufacture all or part of a U.S. origin defense article. It includes government-to-government licensed production. It excludes licensed production based upon direct commercial arrangements by U.S. manufacturers.

"Licensed production -- Overseas production of a U.S. origin defense article based upon transfer of technical information under direct commercial arrangements between a U.S. manufacturer and a foreign government or producer.

"Subcontractor production -- Overseas production of a part or component of a U.S. origin defense article. The subcontract does not necessarily involve license of technical information and is usually a direct commercial arrangement between the U.S. manufacturer and a foreign producer."

The first problem stems from the definition of "coproduction." Senator Heinz and I during our dialogue were using "coproduction" in its generally accepted sense of sharing work in producing the item in question. The OMB Report uses the term to define a government-to-government arrangement under which a foreign partner is set-up, just as in a commercial joint venture. The term "coproduction" as used in the OMB report does not cover work subcontracted out from a prime contractor's own assembly line.

The term "subcontractor production" therefore only refers to a specific form of contract by which work is undertaken overseas. It does not refer to how the work was performed in the United States. AIA staff has confirmed this with the study's authors, who also indicate that respondents to the questionaire often noted that much of the work which was placed offshore in the form of subcontracts was work which the prime contractor would otherwise have done in his own production facilities.

In summary, I do not believe that the OMB Report on Offsets in Military Exports addresses the concern raised by Senator Heinz. Nor is it likely that a questionnaire aimed at prime contractors and limited to offset practices will be able to do so. When the study questionnaire was drafted by government, industry advisors warned that this would be the case. Each offset is so different, and each product and contractor so varied in what percentage of work is normally done in house as opposed to subcontracted out, that data aggregated from such questionnaires will be confusing and misleading.

For that reason AIA has proposed addressing the problems associated with lower tier subcontractors by examining subcontractors, not primes, and looking at the full range of problems which affect them, including offsets. AIA members, which are largely prime contractors and major subcontractors, all have an interest and commitment to the well being of the U.S. supplier base, and would certainly be willing to work with your Committee and the executive branch in pursuing such an undertaking.

I appreciated the opportunity to bring our concerns to your attention during the hearings, and am available to provide any further information which you, the Members of the Committee, and its staff might desire.

Sincerely,

William F. Paul Jr

Senator **Heinz**. Thank you very much, Mr. Chairman.

The **Chairman**. Thank you, Senator Heinz.

Mr. Shaw, in response to a question included in the committee's letter of the invitation to testify today, you discuss the difficulty and inadequacy of current efforts to assess our dependence on foreign material and technology.

Is this an impossible task or do you have any suggestions on how we can improve information on the degree of foreign dependence in our defense industrial base?

Mr. **Shaw**. It's not an impossible task. What it takes is a lot of detailed effort and digging. It's going to take some organization committing a substantial number of person years to go and ferret out the facts.

There is only one study that I know of that does an in-depth job. It was done at the National Defense University. It took a handful—I can't remember what the number was, two or three, I believe—precision-guided weapons and actually traced through to look for foreign components in those weapons.

What they found was, in terms of dollar value in those particular weapons, for content was not very much. But some of those components were critical. That is, there were pieces—I don't remember what they were—that were only available from foreign sources and were critical to making those weapons work. That is, therefore, potential vulnerability, which is, of course, one step beyond just being dependent on a foreign source.

Part of the problem is definitional and we have yet to come to grips with the question of just what is a foreign source anyway when you come right down to really looking at a piece of equipment and saying is this foreign or is this American? Is that company foreign or is that company American? By analogy, Honda makes cars in the United States. Are they American cars or are they Japanese cars? General Motors imports cars from Japan. Chrysler imports pieces of cars from Japan. Are those American cars or are they Japanese cars?

Well, it's ambiguous, but we could at least at some point make a decision about that.

If you look at electronics, you find large companies that do pieces of their manufacturing all over the world. They may produce the silicon in one place and make the chip somewhere else, package it someplace else, send the packaged chip into assembly plants someplace else, and come out with a black box that goes into a computer. To what do you ascribe that particular piece of equipment? Is it American or foreign? Are you concerned about the assembly of a radar processor or are you concerned about the pieces that go into the assembly of the radar processor?

No, it's not an impossible task to figure that out, but it's going to take a lot of hard work. What we've seen is lots of first-cut attempts at the problem. And if all of that effort had been lumped together to do one piece of work instead of a whole bunch of different pieces of work, we might actually have made a lot of progress at it so far.

We were surprised, having approached several large aerospace contractors, and asked the simple question, "Can you give us an idea of foreign content in some of your products?" to have them sort of shrug their shoulders and say, "Well, we know there's a lot, but we have no hard data on it."

The CHAIRMAN. Mr. Koontz states on page 4 of his testimony the following:

> The Government should continue and expand its U.S. generated technologies. This should be done on an equal sharing of monies and resources with the private sector.

Then, sort of compressing this, he then concludes:

> Our major trading partners have amassed their industrial strengths using this approach.

Do you agree with his suggestions that our major trade competitors have used a close Government-industry relationship to significantly strengthen their competitiveness?

Mr. SHAW. Yes.

The CHAIRMAN. And is the general thinking these days in OTA that that's going to have to be done here? Are we going to have to match that? Is there any other way to overcome that if we don't view the need to have a close Government-industry relationship ourselves?

Mr. SHAW. Well, as I was reading once again through "Making Things Better," this powerful picture of Japanese industry emerges. Now I don't know if my understanding is 100 percent accurate. But based on what's in this report, I think it is pretty close to that.

What it says is that, if you read between the lines, if we're going to compete in the world in which the competition operates in that way, we are not going to be able to do it on the basis of continuing the structure of industry that we have had traditionally in this country.

It gets back to this issue of "mom and pop" operations in industries such as machine tools or the question of replacing individual groceries with supermarkets—the analogy to that. The competition just has a much more powerful structure which translates into a much more powerful team.

And we have to think long and hard about how we can really play in that environment because it's fairly clear that we have not been very successful so far.

Just as one quick piece of that problem, we are not right now competing head-to-head with the Japanese on defense equipment on the international market, but if you look at the structure of a company like Mitsubishi which is a primary Japanese defense equipment manufacturer, they do a very small amount of their business in defense. They are an enormous company in high technology manufacturing and other forms of manufacturing across the board and they can afford to absorb problems in defense by making it up in their other areas of business. It's a vertically integrated company. It produces components and everything else, and has a very ready and affordable source of capital.

That's a fairly powerful combination to have to go against with the structure of industry that we have in this country.

Do we have to emulate what the competition does? I'm not an economist and I don't know the answer to that. But has our approach toward the competition been unsuccessful? I think the answer to that is by and large fairly clear.

The CHAIRMAN. Mr. Koontz, you mentioned in your testimony that your consortium, NCMS, is pioneering a new way to transfer technology from the Department of Energy labs. Can you just elaborate a little bit on that?

Mr. KOONTZ. Yes. That was a third statement I didn't have time to finish that was obviously to advocate the fact that we have billions of dollars of research that is, you might say, closeted up in the various Department of Energy, Department of Defense, whatever, in this country, with not necessarily the best ways of—either because of law of what is secure and what isn't—but to get it into the hands of the private sector which could use that technology.

But one project that we are working on with Secretary Watkins, we have a memorandum of understanding at the present time with the Department of Energy to try to get to work on attempting to get some of the technology out of the Department of such places as Oak Ridge and other various agencies that we can work together in finding a way of transferring some of this technology into the private sector.

We are continuing to work with that Department and apparently we have some kind of a basis for doing it. It looks like we're going to have to reallocate about $50 or $70 million, as I understand, of funds in order to construct from the Department of Energy—construct the methods and the seminars and the various things necessary to do that. So that's a little hangup. But we are in the process of moving ahead. Both sides are very positive and this will be hopefully a model of what we could do in the future with the Department of Defense or other agencies that harbor a great deal of research that we can't get into our hands to the people who can make use of it.

The CHAIRMAN. Mr. Paul, you state on page 6 of your testimony that you generally oppose governmental interference with offsets "beyond legitimate concerns for transfer of technology and compliance with national security interests."

I know we've gone back and forth on this with Senator Heinz this morning, but let me ask you, what do you consider "legitimate concerns for transfer of technology" and how would you phrase such a standard in legislative language?

Mr. PAUL. Well, I think that the legitimate concerns would be the critical technologies that the U.S. Government feels cannot be transferred for national security reasons.

I think a great deal of work has been done to define that critical list and much is going on at the moment with the United States and with CoCom to review that list to be sure in fact those technologies are critical. To that extent, I think we ought to follow those results and stay with hopefully those determinations.

The CHAIRMAN. Let me ask a question to all of you. That is this, and I think it's a fairly direct question and hopefully you can give a direct answer to it.

Senator Dixon's bill seeks to improve the integration of national security policy and national economic policy by appointing the Secretary of Defense to the Economic Policy Council. So that would be one cross-connect.

And I'm wondering how you feel about that, but also would it help the integration process if the Secretary of Commerce were made a member of the National Security Council. Shouldn't we be adding ourselves up into new combinations at the highest level in the executive branch? Do you have a view on that, Mr. Paul?

Mr. PAUL. For my own purposes, I would like to, if it's all right with you, to come back with a written answer to that and talk to the Aerospace Industries Association and get their view on that point since I am representing them today.

[Response to Chairman Riegle's question follows:]

While we strongly support the integration of national security policy with our national economic policy, the AIA has not taken a position on whether legislation to mandate that the Secretary of Defense serve on the President's Economic Policy Council is the proper organizational solution.

The CHAIRMAN. All right. Mr. Koontz?

Mr. KOONTZ. The only thing I can say is that I stressed in my testimony that a strong economic base, whether it be civilian—basically, it's one and the same as our national security base, so anything that would couple these two together would be helpful and I think that pulling the Commerce Department and the Defense Department together in some way certainly is a show of what has to be done in the future and certainly all the laws are there to allow—not necessarily all the laws, but the procedures are there to do so and really all we need is an attitude from this government that says we're going to get this job done. If that's what it takes to get it done, then I'm all for it.

The CHAIRMAN. Mr. Dudon?

Mr. DUDON. I'm talking as a rookie here.

The CHAIRMAN. You're not a rookie after 27 years out there in Dayton banging heads and keeping a company together with 87 employees. You're no rookie. So we want your view.

Mr. DUDON. I'm a rookie in politics. It sounds like any time you can work together as a team, I'm a firm believer in team atmosphere and it sounds like you're going to do some cross-training between the two, so it's got to be something good.

The CHAIRMAN. Mr. Shaw?

Mr. SHAW. Well, I'm tempted to give you the same answer as Mr. Paul—let me go home and study it—but let me give you a quick reaction.

And that is, what we are groping toward here clearly is higher visibility for the issue of defense development and defense manufacture in our national security strategy and certainly one way to accomplish that is to give industry a higher visibility in the national security process.

Off the top of my head, I am not enough of an expert on the structure of the NSC and how it fits in with the way this administration does its work to make an honest assessment of what it would mean to put the Secretary of Commerce in that position. You also have to think in terms of the longer term and not just the personalities that currently are making policy for the administration.

So with your permission, I would like to get back with a written response.

[Response to Chairman Riegle's question follows:]

QUESTIONS FOR THE RECORD: ALAN SHAW

Question from Chairman Riegle:

Since economic security is part of national security, should the Secretary of Commerce sit on the National Security Council?

There are two ways in which economic security is part of national security: (1) our standard of living and national wealth are primary components of our quality of life--an essential part of our total security--as well as the basis on which to purchase the forces we need for security; (2) a healthy industrial base, one that has not been lost to foreign competition, is essential for manufacturing equipment for our military forces. That being the case, industrial considerations ought to be taken into account when making security decisions. The decisions should be scrutinized for potential effect on industry and economic well-being. And defense decisions should take into account how the forces will be built and maintained, as well as how military operations may affect the ability of the U.S. to obtain materials (raw and manufactured) that it needs for the defense of the nation. Finally, the U.S. is increasingly dependent for its economic well being on other nations: for trade, and for access to key resources and technologies. These relationships are increasingly sustained under the Secretary of Commerce.

Decisions on these matters could benefit from inputs from the Secretary of Commerce. Those inputs could be obtained by having him on the NSC, but through other mechanisms as well. For example, inputs regarding defense production could be supplied to the Secretary of Defense by the Undersecretary for Acquisition in consultation with the Commerce Department. Existing mechanisms allow for obtaining the advice of the Secretary of Commerce regarding major national decisions. For example, through the cabinet, directly to the President, or on request from the Secretary of Defense, the Secretary of State, or the National Security Adviser.

On the other hand, putting the Secretary of Commerce on the NSC would give him a voice in matters that his job does not otherwise require him to participate in, such as planning military operations, and reactions to international political crises. Indeed, the role of the Secretary of Commerce in national security affairs has a long term cast to it--planning and guiding the ability to stay competitive industrially and maintain the industrial capacity necessary to mobilize forces. The NSC tends to be involved in responding to immediate crises.

The **Chairman**. Senator Bond is a former Governor of a State that has a lot of manufacturing activity and very important parts of our strategic foundation located in his State, so he's had a chance to see it both as the chief executive of his state as well as a U.S. Senator. And I know he has a keen interest in this. So let me yield to him now.

Senator **Bond**. Mr. Chairman, I appreciate your kind words and I must apologize to this distinguished panel. I was looking forward to being present for the entire thing, but when agricultural day was greeted with snow on Tuesday the White House postponed their kickoff of their tree-planting program in which I'm involved on the agriculture side, so I assure you gentlemen that this is a subject of great interest to me. We will be reviewing your testimony and I apologize if the question I am going to address to all of you is one that you've covered. Even if it is, it probably doesn't hurt to explain it to me one more time so I'll get a better sense of it.

My question builds on a feeling that I get that we are losing a significant number of manufacturers from defense production because of the difficulties that are encountered in dealing with the Pentagon. I hear time and time again concern and frustration over the rules and regulations. There's a lot of frustration over the uncertainty of congressional funding and that's not always the Pentagon's fault. That may be a little bit of our problem. And I can understand when you have a start and stop kind of funding that causes uncertainties.

But I'd like each of you to enlighten me as to what you see could be done to encourage more manufacturers, more providers of goods and services, to compete in the defense area. As sort of a basic course, what can we do by legislation or by urging administrative action to make it more attractive, to get more companies, more competition involved in defense-related activities?

Why don't we start with you, Mr. Paul?

Mr. **Paul**. Thank you, sir. I couldn't agree with your opening comment more. As a matter of fact, in this whole subject, we haven't discussed this issue. Probably the most significant issue is the ability of the United States defense contractors, large and small, to have enough cash to invest in itself. As I said earlier, we are at the moment in debt. Our debt is growing. And predominantly, in my judgment, it's because of the cost of many of the debilitating regulations that have come out in the Defense Department over the past 5 years.

I understand many of them came out and the reasons why they did, but in aggregate, what they are doing is, they are causing a great deal of review as to whether or not one should stay in the business and, for the smaller companies, it's becoming enormously debilitating to stay in this business.

What can we do? First of all, I think we have to swing the pendulum somewhat back toward a more balanced approach, taking into account the economic impact of these regulations and the extremes of some of these regulations.

Secondly, I think we have to increase the progress payments so that the progress of cash can flow into the major contractors down into the subcontractors and down into the smaller tiers.

Thirdly, we have to have, I believe, 100 percent coverage of research and development costs so that we can incentivize research and development.

Those would be the three specific areas I would respond to, sir.

Senator BOND. Thank you. Mr. Koontz.

Mr. KOONTZ. Well, I think as sort of a middle of a small businessman, so I'm really a second-tier supplier in the various areas of machine tools.

In my testimony I talked about one of the things that we could do related to the consortium issue for the large manufacturers of defense supplies was to include in their contracts—they are now disallowed any dues to be paid to a consortium that has anything to do with technology development or transfer. That is disallowed. So we are getting a disproportionate number of defense contractors who are willing to take part in technology development consortia. So that's one area.

In my own backyard, some of my problems as a small manufacturer with defense contracting, even though I do sit on the Defense Science Board, but I'm looking at my own business—the paperwork is unbelievable for a small manufacturer to wade through and there is no person-to-person contact. Usually you're quoting against the contract with no involvement of ever really talking to the customer. So therefore you bid against some set of specifications with no communication one way or the other. If you don't dot the "i" or cross the "t" you may get halfway through—I talk from experience with the machines I've built where I was halfway through the project and somebody forgot to list the right model number and the contract was cancelled and the next thing we get is a letter saying if you want to contest this you will go to court, otherwise cancel the machine with no cost.

So it gets very disheartening to even get involved in government contracting. Just to give you one example of why small business think twice about doing business with the government.

Senator BOND. Thank you. Mr. Dudon.

Mr. DUDON. I think there are two things that maybe could be addressed to make it a little easier for small business to deal with the Government or DoD.

One of them are bid packages. It's so difficult for us as a small business to get all the data we need to bid a project. We call. We don't know who to call. The people we talk to really don't know where to direct us or they really don't care to direct us, so we can't find the proper data we need to fulfill a bid package. Consequently, we end up no bidding a lot of jobs that if we had the right data we would be able to bid it.

Next I think would be training of the people that come into our facility that represent the Department of Defense. After you build the job, it's generally source inspected at your facility and we're talking about some high tech items that people come in to inspect and they don't know the first thing they're looking at. Yet they're going to tell people that spent hundreds of hours building this part that it's good or it's no good. And primarily, all they're going to look at is paperwork. Are the "i"s dotted; are the "t"s crossed?

So I think we have to first make it easier to get the data and, second, train the people who are responsible more efficiently.

Senator **Bond**. Mr. Shaw.

Mr. **Shaw**. Thank you, Senator. When I made my opening statement I asked that the summary of our report "Holding the Edge" be included in the record. There is in that an extensive discussion of this whole issue of encouraging and discouraging companies from doing defense work. I would say, rather than trying to say badly what I wrote well, I would refer to that.

But let me make a couple of comments.

Senator **Bond**. Just pick out the high points for us because if you've got to sit here and tell us you're probably going to do as good a job of highlighting what we ought to get out of it as we could gain from reading the report, which I promise I will do as well.

Mr. **Shaw**. I wasn't trying to put you on the spot.

Senator **Bond**. I'm delighted to do it.

Mr. **Shaw**. There are two related sets of problems. One relates to primarily the larger companies who we normally think of as being defense companies, the prime contractors; and what we face here is in a general sense two problems.

One is that our basic attitude toward them has been that they are all crooks. This is, of course, something of an exaggeration, but the defense business is very much regulated and in a lot of cases for good reason, but we have very much an adversary relationship between the Government and the defense contractors. This is what's behind a number of corporate executives throwing up their hands and saying, "If I could get out of this business, I would." In fact, some of them may well get out of that business not by choice but because there just isn't going to be enough business to go around soon.

One question we're going to have to ask ourselves as a nation is, what do we want the future defense industry to look like, because the budget trends are such that it's unlikely we could afford to have it look the way it looks today.

The other side of the problem are all of the small and medium size innovative companies that deal mostly on the civilian market but also have technology that we would like to get into defense. Here we have a complex set of problems because we have erected barriers to the transfer of technology between defense and civilian manufacture. The rules that companies have to go through to deal with defense, to sell to the Defense Department or to subcontract—some of which have been alluded to in the last few minutes—are such that companies that don't normally do a lot of business with the Defense Department and particularly those that have a very good business in the civilian sector, are discouraged from taking on defense work. And so we lose access to technology in areas that we seriously need to get into our defense equipment.

It results, in essence, in a separation within companies between a civilian part of the company and a defense part of the company, mostly due to the laws and regulations under which the defense procurement system operates.

Senator **Bond**. Well, coming from your office, I think those are very compelling points.

Talk about changing the attitude, is there anything we need to do in changing the laws to deal with either of those problems or do we just need to get our heads screwed on better?

Mr. SHAW. Well, most of it, as we said in the report, is rooted in the laws and the DoD regulations that flow from the laws. This sets up the business structure under which the government buys from companies. If we're serious about changing the relationship of the defense contractors to the Defense Department, we're going to have to change some of those laws.

The problem is that a lot of laws which are burdensome to defense procurement were put in place for other purposes and if we're going to loosen them up we're also going to lose what we've written those laws to get in the first place.

For example, look at the structure of defense contracts and how we deal with issues like fairness issues. We do want to be fair to various companies, but being fair to all the possible offerors makes the system inefficient. Now how do you balance the two? I don't have an answer for you to that question other than that is a very hard and fundamental question that's going to have to be dealt with through legislation.

Senator BOND. I think that to the extent that you can at least give us a clear definition of the tradeoffs and indicate some areas in which there might be changes, I think it might make it easier for us to have the distinguished reputation of the OTA onboard on some of these things. We ought to be looking at things where we are unduly strict on the private sector defense contractors, certainly with your expertise I think you could help us a great deal by identifying those and I think it would make it easier to deal with them if we had your objective assessment as to which those might be.

Mr. SHAW. I would refer back to this report once again because in fact all of that information is in here.

Senator BOND. Sounds like a good weekend reading.

[Further response to Senator Bond's question follows:]

TECHNOLOGY ASSESSMENT BOARD
EDWARD M. KENNEDY, MASSACHUSETTS, CHAIRMAN
CLARENCE E. MILLER, OHIO, VICE CHAIRMAN
ERNEST F. HOLLINGS, SOUTH CAROLINA
CLAIBORNE PELL, RHODE ISLAND
TED STEVENS, ALASKA
ORRIN G. HATCH, UTAH
CHARLES E. GRASSLEY, IOWA
MORRIS K. UDALL, ARIZONA
GEORGE E. BROWN, JR., CALIFORNIA
JOHN D. DINGELL, MICHIGAN
DON SUNDQUIST, TENNESSEE
AMO HOUGHTON, NEW YORK
JOHN H. GIBBONS

JOHN H. GIBBONS
DIRECTOR

Congress of the United States
OFFICE OF TECHNOLOGY ASSESSMENT
WASHINGTON, DC 20510-8025

April 6, 1990

The Honorable Christopher S. Bond
United States Senate
Washington, D.C. 20510

Dear Senator Bond:

At the March 22 hearing on defense industry of the Committee on Banking, Housing, and Urban Affairs you asked me a question to which I gave, in my judgment, an unsatisfactory answer. You deserve a better one, which follows. You asked about how rules, regulations, and legislation discourage companies from doing business with the Pentagon.

The current climate of defense acquisition impedes the efficient purchase of equipment from defense companies, as well as access to technology developed by civilian companies. The system was designed to foster a number of goal among which efficient procurement and optimum access to technology are not the primary

Congress did not intend the defense acquisition system to be slow, cumbersome and inefficient but laws passed to foster goals other than efficient procurement, and the DoD regulations stemming from interpretations of those laws have made it The problems have two root causes One is basic system of government which demands checks and balances on the expenditures of large amounts of public funds The other be traced to the laws Congress has enacted to curb abuses and to ensure: civilian control of military procurement; Administration control over Service activities congressional control and protection of constituent interests environmental protection; fairness; competition accountability honesty; controllable business practices; minority and small business interests and prevention of excessive profits at taxpayer expense. These (often conflicting) goals tie the system up in knots, leading to inefficient procurement and frustrations on the part of both seller and customer.

The government has developed business practices that are different from those of the civilian market Buyer and seller have an adversary relationship; accountability is stressed over efficiency and price; the customer insists access to the accounting and other business practices of the customer restrictions are placed on profits. These necessitate an accounting procedure on the part of defense companies that is different from typical practices in business.

If innovative civilian companies want to sell in the defense market, they can either set up a new division to do business by government rules, or burden their other business with a system that will make the cost of their civilian products uncompetitive. They will often have to give up their data rights to government purchasers. Managers of these companies often feel that for the sake of a very small profit they can get from government sales they will have to compromise the trade secrets that are the key to their competitive advantage in the civilian marketplace. They see this as a bad deal, especially when most of their profit comes from civilian sales. Innovative companies, used to working in an environment in which they earn as large a profit as possible and plow much of it back into R&D for their next product line, cannot accommodate their business to the small regulated profits of government contracts. They cannot afford to write off a large investment because a program was cut out of the procurement budget. Hence these companies are reluctant to take on defense business.

Since some of the inefficiency of the system is rooted in our system of government, there is little we can do about it short of the Congress or the Administration giving up some powers. Beyond that, Congress can elect to make efficient procurement and the preservation of the defense industrial base relatively more important goals than they now are. This can be implemented by changing statutes that govern government purchases to reflect changed attitudes. However, doing so can allow other problems to re-emerge.

It is important to realize that while the defense companies need government business, which gives the government great leverage over them, DoD by and large needs innovative civilian companies more than those companies need defense business. If the business isn't worth the aggravation, they will opt out of defense work, as many have already done. Some large defense companies, although more "captive" to DoD, are also looking for ways out of this business. Since it is likely that there will be great overcapacity in defense production, the government should not be seeking accommodation at any price in order to entice them all to stay in the defense business. The U.S. doesn't need to keep all these companies going no matter what the cost. The government should be planning to make intelligent judgments regarding what capacity it needs to have in the future and how to maintain that capacity. OTA is about to begin an assessment of this issue.

If OTA can be of any further help on this matter, please contact me.

Sincerely,

Alan Shaw

Alan Shaw
Manager
International Security and
Commerce Program

Senator BOND. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Bond.

I want to indicate that Senator Dixon was tied up on the floor today because he's involved in an amendment on the Clean Air Act and he came over because of his intense interest in this. He's been a principal leader in the effort on the Defense Production Act, so let the record show that he was here and expressed his regrets through me that he could not be present for your testimony. He has left a prepared statement that will be inserted in the record at this point.

STATEMENT OF SENATOR ALAN J. DIXON

Senator DIXON. Mr. Chairman, this morning our committee convenes to receive further testimony on how to modernize and strengthen the Defense Production Act of 1950, and how to improve S. 1379, the "Defense Production Act Amendments of 1989."

The testimony of today's witnesses continue the themes that have dominated these hearings: The industrial base is decaying, and the rate of decay is accelerating, especially among lower tier subcontractors and suppliers. Our technological base, which has provided our military with their technological edge, is headed in the same direction. Remedial actions needs to be taken, and quickly. Cooperation between industry and Government must be improved. Restraints on joint activities within industry need to be moderated, to permit them to confront the challenges of our global trading partners.

Today's testimony also reflects the broader theme that you, Mr. Chairman, have been developing these hearings. Restoring the competitive vitality of America's industrial base and technology base will take sustained effort making use of broad array of remedial tools. Modernizing and strengthening the Defense Production Act is but a single element of the overall solution.

It is, however, in the view of all of our witnesses, a very fundamental remedial too, and the one that is most readily at hand. Today's witnesses brings us many specific suggestions. At this point, I believe that is clearly what we need. After the many wignesses we have heard, I still believe that S. 1379 represents a very solid foundation for the committee's forthcoming mark-up.

Our first witness today, Bill Paul of United Technologies, is here representing the Aerospace Industries Association (AIA). He will be offering AIA's specific comments on S. 1379, which have been under development for some time. It appears to me that our points of agreement are numerous and our differences restricted to a few, important issues. This does not surprise me since in for formulation of S. 1379, I actively solicited the comments and suggestions of an array of industry groups, including AIA.

With respect to the tough issue of how to deal with offsets, AIA brings a positive recommendation. There is little disagreeement that OMB's implementation of the Act's current requirements relating to assessing the impact of offsets fails to provide useful information relating to their impact on subcontractors and suppliers. I am not sure that AIA's recommendation on offsets necessarily needs to be a substitute for the proposals set forth in S. 1379.

AIA also brings to the table two positive suggestions aimed at fostering increased investment in the development of emerging critical technologies and modern production equipment and processes. Improving cash flow and supporting contractor initiated research and development efforts have been goals urged upon the committee by several prior witnesses.

Mr. Chairman, without further comment, I want to again thank you for your leadership, and join you in welcoming today's witnesses. I look forward to their testimony.

Senator RIEGLE. You've given us very helpful testimony today. We will have some questions for you to answer for the record from some of the members who were not able to be here.

We appreciate what you've given us today. It will help guide us in our work. We thank you.

The committee stands in recess.

[Whereupon, at 11:45 a.m., the hearing was adjourned.]

[Response to written questions and additional material supplied for the record follow:]

RESPONSE TO WRITTEN QUESTIONS OF SENATOR GARN FROM

PAUL F. MATH

Q1. You testified that you support increasing the role of Commerce in assessing the impact of international defense programs, such as military coproduction efforts, on the overall U.S. industrial competitiveness. The example you used of a separation of trade and economic issues from security issues was the FS-X negotiations when the Department of Defense did not coordinate with or pursue the views of the Department of Commerce.

Elaborate on the details of that negotiation and your opinions about the real consequences of that policy, or lack thereof. Also could you comment on if the negotiations on the Korean Fighter deal have addressed the concerns raised in the FS-X deal.

A1. GAO Answer:

The FS-X will clearly involve a greater degree of technical data flow to Japan than previous coproduction programs, particularly in the areas of software and other design data. The Memorandum of Understanding (MOU) was signed by the two governments on November 29, 1988, without soliciting information from the Department of Commerce of the effects of the MOU on the U.S. industrial base. Subsequently, serious questions were raised about the equity of the proposed agreement and the technology to be transferred to Japan. Some U.S. industry and government officials told us that the skills and knowledge acquired from this program can generally be applied to other aerospace programs. We stated during testimony given before the Subcommittee on Investigations, House Committee on Armed Services, that although no individual project in the series of coproduction program with Japan over time transfers the technological keys to bridge the competitive gap, the broad range of successful joint projects will reduce the time and expense it would have taken the Japanese firms to catch up and become meaningful competitors in the aerospace/aircraft manufacturing industry.

Although legislative requirements to coordinate and consult were in place since September 29, 1988, DOD did not include Commerce in three meetings held prior to May 1989 on the Korean Fighter Program (KFP) with Korean government officials. Nevertheless, in the negotiations on the KFP, DOD has coordinated with Commerce more that it had on the U.S. Japan FS-X program. For instance:

-- DOD briefed Commerce officials on the KFP in May 1989.

-- The Secretary of Commerce discussed the KFP with the Korean Minister of National Defense in July 1989.

-- DOD coordinated the 1990 draft MOU with the Departments of Commerce and State. Commerce reviewed the initial draft MOU and made arrangements for its review at other agencies.

-- DOD has included Commerce on the KFP negotiating team.

-- DOD and Commerce have signed an agreement on a key KFP negotiating position for the United States.

Kingsbury Corporation

Keene, New Hampshire
03431-2059 U.S.A.
Tel: 603-352-5212

Fax: 603-352-8789
Telex: 287317

KINGSBURY

April 5, 1990

Ms. Lory Breneman
Chief Clerk
Senate Committee on Banking, Housing & Urban Affairs
534 Dirksen Senate Office Building
Washington, DC 20510-6075

Dear Ms. Breneman:

Please find enclosed, my response to the question from Senator Mack during the March 22, 1990 hearing on reauthorization of the Defense Production Act.

The question itself should be corrected for the record as follows: "...representative of the NMTBA - The Association For Manufacturing Technology..." not "...representative of the National Tooling and Machining Association..." We kept the acronym, "NMTBA" which was short for our former name, "National Machine Tool Builders' Association." I was a former chairman of the board of NMTBA, however, I appeared before your committee in my capacity as chairman of the board of the National Center for Manufacturing Sciences (NCMS).

If you need any further information, please feel free to contact me.

Sincerely,

KINGSBURY CORPORATION

James L. Koontz
President & CEO

JLK/dmt
Enclosure

RESPONSE TO WRITTEN QUESTIONS OF SENATOR MACK FROM
JAMES L. KOONTZ

Mr. Koontz, there is one part of the existing legislation that allows the President to require priority performance under contracts and allocate materials and facilities as necessary to promote the national defense. In your capacity as either the CEO of a business or as a representative of the Association for Manufacturing Technology **have you experienced scheduling pressures as a result of a defense department requirements? This pressure could come in the form of an accelerated schedule, priority placement of a defense department order or some other form of production challenge presented by the government.**

If you and or others in your Association have had experiences, please describe the item ordered, the demands placed on the firm and the impact the demand had on other orders and customers.

ANSWER

The short answer is that my company has not experienced any priority performance pressure under government contracts and I am not aware of any such pressure on other members of our Association.

I would like to add that although my industry is generally unaffected in a peacetime environment, I recognize the need for having established authority for requiring priority performance. Certainly, that is important in time of emergency and, even in peacetime, it is a mechanism that could be, and I believe has been, very effective in addressing national security needs.

RESPONSE TO WRITTEN QUESTIONS OF SENATOR D'AMATO FROM DR. ALLAN SHAW

Q.1. In your testimony you mention the difficulty in defining and identifying "American" companies. Every other day we read of mergers, acquisitions, and joint ventures that result in the combination of what was clearly an American firm with a foreign firm. The trend toward multinationalization, or even globalization of firms will likely accelerate in the near and mid-term. To what degree does this trend threaten to make the concept of national companies obsolete, and thus further complicate the goals of the Defense production Act?

A.1. While the concept of a national company is not likely to become obsolete, the number of companies--particularly major companies--to which it can be applied unambiguously will decline significantly. Many small companies, like those represented by Mr. Dudon, will stay unambiguously American--i.e. owned by Americans and operating in the U.S.--while others of that size will be purchased by foreign interests. It will be hard to distinguish between foreign purchase (or investment short of total purchase) simply to get a stake in a profitable enterprise, and purchase to obtain control of technology or to gain a U.S. outlet for foreign products.

The picture will be even more complicated in the case of larger companies, where there are many opportunities for interlocking arrangements: e.g. purchases of large numbers of shares of stock, mutual investment, joint ventures, etc. For example, on March 28 the New York Times reported that Daimler Benz and United Technologies were entering into an arrangement in which each will purchase a substantial block of the other's stock. This will facilitate closer working relationships. The claim is that this will be solely in the civilian aerospace market, but both these companies are heavily into defense work. Large defense companies are more likely to keep their American character than are large civilian manufacturers, but arrangements like the UTC-DB arrangement will clearly muddy the waters when trying to identify a domestic company.

In the future, contracting will have to take into account the possibility of technology transfer to foreign partners/owners, as well as the policies of foreign participants.

On March 27, the Washington Post reported that two chemical companies had refused to sell the Army chemicals necessary for the production of chemical weapons. One of the companies, although based in Pittsburgh, is owned by a German firm. Attempts to compel sales under the terms of the Defense Production Act have caused diplomatic problems. The Germans--whom the U.S. has accused of selling similar chemicals to Quadaffi--are less than eager to be seen as selling such chemicals for the purpose of making chemical weapons.

Thus, it will be difficult to come up with a meaningful definition of a domestic company without reducing the number of companies that qualify to a uselessly small number. The more restrictive the definition, the smaller the number of qualifying companies. However, a sufficiently inclusive definition can defeat the purposes of restricting purchases to domestic suppliers.

National Tooling & Machining Association

NTMA
PRECISION

APR 2 1990

March 30, 1990

Ms. Lory Breneman
Chief Clerk
Senate Banking, Housing and Urban
Affairs Committee
534 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Ms. Breneman:

The attached is the response to the written question submitted by Senator Alfonse D'Amato to Mr. Dave Dudon subsequent to the hearing held on the Defense Production Act on March 22, 1990.

If there is anything else you require, please contact Ms. Jeanne Little at 248-6200.

Sincerely,

John A. Cox, Jr.
Manager, Government Affairs

JML/mac

Attachment

9300 Livingston Road • Ft. Washington, Maryland 20744 • (301) 248-6200

RESPONSE TO WRITTEN QUESTIONS OF SENATOR D'AMATO FROM

DAVID A. DUDEN

Q.1. As you know, S.1379 provides for antitrust protection for "sanctioned industry consortia." Your Association has indicated its strong support for the proposal with a streamlined procedure. Those who are opposed to this provision argue that such consortia would have a long-term, anti-competitive effect. They argue that it is foolhardy to believe you can spur competitiveness through competition-retarding mechanisms. How do you answer these critics? Moreover, do you believe this nation's traditional beliefs concerning antitrust laws are outdated in light of the global economy?

A.1. The NTMA does not support the approval of any joint venture whose anti-competitive effects outweigh the benefits. We do support the establishment of consortia that are pro-competitive. Legislation should enable small firms to form joint ventures that would not have an adverse effect on competition.

The risks involved in forming consortia are great especially for small firms who are capital-intensive. The focus of antitrust reform should enable these firms to participate. Small firms, if sued at all, would be out of business. Small firms often cannot afford attorneys fees let alone actual or treble damages It is for this reason that the Department of Justice and the courts must weigh the economic benefits of joint ventures against the economic costs of having less competition in a particular market segment. Their judgment should be based on a standard of reasonableness. If a joint venture is determined to be anti-competitive, the venture would not be approved.

Update and reform of the antitrust laws are necessary to help domestic firms compete here and more importantly, abroad. In light of the global economy, yes, traditional beliefs regarding antitrust laws are outdated. The U.S. no longer has the market on innovation and new technology. Technology is growing at such a rapid pace that a radical re-evaluation of our government policies is warranted. The flexibility to form consortia will directly affect the bottom line of small companies. It will increase the ability small firms to compete. Equipment is expensive and can become obsolete in months. Consortia of small companies, especially in capital-intensive industries like the tooling and machining industry, where cost of productive equipment is massive, can pool their resources to invest in technology that is unavailable to them singly.

Disallowing consortia leaves one alternative -- mergers. We feel that cooperation is a more competitive alternative. Again, large companies have greater production capabilities and greater ability to absorb financial risk small and medium sized firms are at a competitive disadvantage with these large firms and often must sell their ideas and innovation to large firms to remain competitive

This minor reform of antitrust laws will make us more competitive domestically as well as encourage entrance into export markets.

RESPONSE TO WRITTEN QUESTIONS OF SENATOR MACK FROM
DAVID A. DUDON

MTD
MUTUAL TOOL & DIE INC.
725 LILAC AVENUE • DAYTON, OHIO 45427
TELEPHONE (513) 268-6713
FAX # (513) 268-4688

April 24, 1990

The Honorable Donald W. Riegle Jr.
United States Senate
Washington, D.C. 20510

Subj: Answer to Senator Mack's question

Dear Mr. Chairman:

Below is Senator Mack's question, as well as my response.

Q.1. Mr. Dudon, there is one part of the existing legislation that allows the President to require priority performance under contracts and allocate materials and facilities as necessary to promote the national defense. In your capacity as either the CEO of a business or as a representative of the National Tooling and Machining Association have you experienced scheduling pressures as a result of a defense department requirements? This pressure could come in the form of an accelerated schedule, priority placement of a defense department order or some other form of production challenge presented by the government.

If you and or others in your Association have had experiences, please describe the item ordered, the demands placed on the firm and the impact the demand had on other orders and customers.

A.1. In the past we have experienced a small amount of pressure to meet or accelerate a delivery on a tool as the result of a defense department requirement. The cost impact to us is usually minimal due to an expedited delivery charge to our customer, but the labor demand to meet the delivery requirement is very intense. This intensity carries over to our suppliers, as they have to better their promised delivery of materials to us, which they in turn charge for their expedited services.

Another important situation that is created from this accelerated delivery is the domino effect it has on our deliveries to our other customers. When we're required to stop work on other customers orders to accomodate the accelerated delivery for the government, we fall out of the good graces of

DESIGNERS • BUILDERS • TOOLS • DIES • SPECIAL MACHINERY
Your Satisfaction Is Our Future!

our other customers because of having to ship their orders after our promised delivery date.

If additional information is needed, please contact me.

Sincerely,

MUTUAL TOOL & DIE, INC.

David A. Dudon

David A. Dudon

DAD/md

STATEMENT FOR THE RECORD
BY THE HONORABLE ROBERT H. MORRIS
ACTING DIRECTOR
FEDERAL EMERGENCY MANAGEMENT AGENCY
FOR THE
COMMITTEE ON BANKING, HOUSING AND URBAN AFFAIRS
UNITED STATES SENATE
MARCH 8, 1990

Mister Chairman and members of the Committee, I am pleased to provide comments on both S. 2168 and S. 1379, bills which would amend the Defense Production Act of 1950 (DPA).

One of the key functions of the Federal Emergency Management Agency (FEMA) is the coordination of the Federal Department and Agency programs for national mobilization preparedness. In addition, I am delegated the responsibility to provide guidance to the heads of Federal departments and agencies on the appropriate use of defense production authorities in order to improve the capability of industry and infrastructure systems to meet national security emergency needs.

In meeting my responsibilities I am fully aware that the DPA is the major statute for mobilization readiness. As you know, the non-permanent provisions of the DPA will expire on August 10. The Administration views the possibility of such expiration as disruptive to ongoing programs such as the defense priorities and allocation system under Title I; new purchases, purchase commitments and other activities under Title III; and the National Defense Executive Reserve program under Title VII which utilizes industry executives. The DPA also authorizes other mobilization planning and programs that are critical to national defense.

The expiration of the primary authority for mobilization preparedness will undermine ongoing efforts in these areas and will send unintended signals to our potential adversaries. In addition, several of the existing authorities of the Defense Production Act should be strengthened in order to more effectively meet mobilization requirements.

We strongly support S. 2168 which effectively enhances mobilization preparedness by:

- Permanently extending the non-permanent provisions of the Defense Production Act to avoid costly disruptions to these important activities;

- Introducing the concept of "Graduated Mobilization Response" into the declaration of policy Current mobilization planning incorporates this concept which provides for a graduated response to early warning indicators to ensure the timely availability of adequate industrial production and resources for national defense requirements;

- Authorizing the use of Title III authorities to expand domestic capacity of strategic and critical materials and the industrial base, among other purposes;

- Strengthening the executive reserve program by providing limited protection from the Federal conflict of interest and antitrust laws; and

- Repealing the prohibition against international voluntary agreements. International voluntary agreements should be authorized under the Defense Production Act so the United States is able to meet its treaty obligations to other NATO countries and to strengthen other energy and shipping programs.

There are other technical amendments to the Defense Production Act which have merit You will find attached to this testimony a more detailed sectional analysis of S. 2168 along with a program rationale supporting its provisions.

Turning to S 1379 the "Defense Production Act Amendments of 1989" we support those provisions which are similar to S. 2168 but oppose many provisions which differ significantly from S. 2168 Attached to my statement is a detailed section-by-section analysis which provides the Administration's position on S. 1379.

With respect to an issue of concern to the Committee, FEMA agrees that we need to be concerned about the dependence of our defense industrial base on single manufacturing sources, whether foreign or domestic.

In addition, FEMA is working closely with the Department of Defense to develop and implement the Graduated Mobilization Response system that focuses on interagency actions to be taken based on warning that signal a potential threat to national security. FEMA recently issued the attached regulation which establishes a GMR System for developing and implementing mobilization actions that are responsive to a wide range of national security threats and ambiguous or specific warning indicators. GMR provides for a coherent decision making process with which to proceed with specific responses to an identified crisis or emergency.

I should like to note that we are currently reviewing mobilization preparedness policy and programs in light of the changing international political and military situation. We are identifying ways of improving our mobilization responsiveness capabilities.

In conclusion, Mr. Chairman and members of the Committee, the Federal Emergency Management Agency, on behalf of the Administration, strongly supports S. 2168 and its permanent extension of the Defense Production Act. We hope that the Committee in its deliberations will closely look at these provisions and agree that the national security of the nation will be enhanced by their enactment into law.

Attachment 2

SECTION BY SECTION ANALYSIS
OF S. 1379
DEFENSE PRODUCTION ACT AMENDMENTS OF 1989

Section 1. Short Title.

This section cites the title of the bill as the "Defense Production Act Amendments of 1989".

Section 2. Congressional Findings.

This section sets forth the Congressional finding that the Act needs to be amended:

- to improve its effectiveness and efficiency in sustaining and developing the Nation's existing productive capacity to meet national defense needs;
- to establish a revolving fund under Title III of the Act for improved management of resources dedicated to programs under that Title;
- to foster the development of emerging technologies and advanced processes by providing appropriate protection for joint undertakings in research, development, production and marketing; and
- eliminate outdated provisions of the Act.

Section 101. Declaration of Policy.

This section of the bill amends section 2 of the Act by completely rewriting the Declaration of Policy statement.

This proposed amendment to the policy statement is too narrow in that it does not give consideration to other mobilization preparedness programs, such as, essential civilian requirements or the need for stockpiling of strategic and critical materials, including energy. The policy statement needs to be expanded to refer the other mobilization programs that help ensure that essential national defense requirements are met in time of a national security emergency. It does not speak to peacetime production surge or mobilization as part of the graduated mobilization response to national emergencies. Mobilization is more than maintaining an effective and efficient industrial base, it is the marshalling of those resources, both military and civilian, that are necessary to met the requirements of a national security emergency. Examples of such resources are manpower, infrastructure, and raw materials. The Defense Production Act authorizes programs other than for maintaining the industrial base, such as, the priorities and allocation program under Title I, voluntary agreements under section 708, and the National Defense Executive Reserve under section 710.

To address these requirements the Administration bill proposed the following as part of the Declaration of Policy:

"There is a need for measures to reduce defense production lead times and bottlenecks To provide for the national defense and national security our defense mobilization preparedness effort continues to require the development of preparedness programs, defense industrial base improvement measures, and the expansion of domestic productive capacity and supply beyond the levels needed to meet the civilian demand, as well as a need for a maximized response to early warning indicators to ensure the timely availability of strategic and critical materials, including energy and other industrial resources, which could adversely affect the national defense preparedness of the United States In order to ensure the national defense preparedness which is essential to national security, it is also necessary and appropriate to assure domestic energy supplies for national defense needs."

Section 111. Expanding the Reach of Existing Authorities Under Title III.

Subsections 111(a) and (b) of the bill amend subsections (a)(1) and (a)(3)(A) of section 301, and subsection (a) of section 302 of the Act by inserting the new defined terms "industrial resources" and "critical technology" in place of "materials" and "performance of services".

Granted the new terms include the terms "materials" and "services" in their definitions but we recommend that the phrase "performance of services" be retained in the language of section 301 and section 302 so there is no question that the authority under these sections extends to the performance of services. By deleting the phrase, there is a presumption that the authority no longer covers the performance of services. There would have to be an explicit rationale in the Committee Report on the Bill to overcome this presumption and an in-depth explanation of the reason for the deletion to preserve the coverage. We recommend, therefore that the phrase "industrial resources or a critical technology" on lines 24 and 25 of page 5, on line 3 of page 6 and on line 7 on page 7, be changed to read "industrial resources, a critical technology or the performance of a service".

We agree with the amendments to section 301 and 302 providing the President with the discretionary authority to waive the requirements subsection (a)(3) of section 301 and subsection (c) of section 302, if he determines, on a nondelegable basis that the guarantee authorized under section 301 or the loan authorized under section 302 must be promptly made to avert situation that would severely impair national defense. We also agree with the amendment to raise the ceiling from $25,000,000 to $50,000,000 on guarantees under section 301 and on loans under section 302 that could be made without being specifically authorized by law to correct an industrial resource shortfall.

Subsection 111(c) amends section 303 of the Act to insert the new terms "industrial resources" and "critical technology" in place of "metals, minerals and other materials" and raises the ceiling from $25 000 000 to $50 000 000 on actions to fill a shortfall under the authority of section 303 without being specifically authorized by law. We agree with these amendments to section 303. We also agree with the amendment to section 303 granting the President the authority to waive the limitations contained in section 303 on actions to correct an industrial resource shortfall when he determines that such actions must be promptly made to avert a shortfall that would seriously impair the national defense.

Section 111(a)(2) amends section 303(b) of the Act to change the date certain for the expiration of transactions under section 303 to ten years from the date of initial execution of such transactions. We agree with this amendment because this section will not have to be amended when the Act is extended in the future as was the case in the past The Administration's proposed amendments to the Defense Production Act contain a similar amendment to section 303(b).

Section 112. Sales or Transfers of Excess Industrial Resources.

This Section amends section 303(f) of the Act to provide for reimbursement for the sale or transfer of industrial resources that are acquired under section 303.

We disagree with this amendment. This provision is only necessary to help keep the Fund established under section 113 of the bill liquid.

Section 113. Defense Production Act Fund.

Section 113(a) of the bill amends section 304 of the Act to establish a Fund for Title III projects.

Such a Fund, in our opinion, is not necessary for Title III programs and is not in the Administration's bill.

With regard to proposed section 304(g)(2)(B) on Determination of Liability, we note that there is no mechanism for covering possible shortfalls in the Fund when the return of money on any transaction falls short of the that which is expected under the formula established This Fund is similar to the borrowing authority that was previously funded under section 304 of the Act and repealed in 1974. Under the terms of that authority the liability was measured by the probable ultimate net cost of the contract The costs were estimated so liberally that the fund became bankrupt. This comment is cautionary because we have no way of judging that the "one-third" measure is conservative enough to protect the fund from the same plight.

In completely rewriting section 304, section 113(a) repealed the current subsection 304(a) which authorizes the President to utilize existing departments, agencies, officials or corporations of the Government to carry out the purposes of sections 302 and 303 of the Act, as he deemed appropriate or to create new agencies for this purpose We believe that the repealer may have been inadvertent since no mention of the removal of this subsection was alluded to in the sectional analysis accompanying the publication of the bill in the Congressional Record. In any event, we strongly object to its removal. Since time is of the essence during a national emergency, the President needs the flexibility of delegating sections 302 or 303 programs to whomever he deems best suited to properly carry out his responsibilities under the Act and this includes the establishment of a new agency for this purpose, as a possible option.

Section 113(b) amends the Strategic and Critical Materials Stock Piling Act by providing for the transfer of $200,000,000 from the unobligated balance of the National Defense Stockpile Transaction Fund to the Fund established under section 304(a) of the Act. The amendment further provides for the transfer of up to $10,000,000 to the Fund from monies derived from the sale of materials from the stockpile each fiscal year. In carrying out our responsibility under the National Security Act of 1947 as amended, of coordinating the policy of establishing adequate reserves of strategic and critical material, and for the conservation of these reserves we strongly oppose the transfer of funds from the National Defense Stockpile Transaction Fund. While we are strongly in favor of the expansion of industrial base capacities through Title III programs, we view this transfer of funds from the National Defense Stockpile Transaction Fund as a weakening of the stockpile program. With the current strategic policy evolving from a nuclear to a conventional war scenario it becomes increasingly important to have a strong strategic and critical materials stockpile supporting the national defense and essential civilian requirements. We therefore reiterate that while we are for a strong industrial base we do not support the transfer of funds from the National Defense Stockpile program to accomplish this goal.

Section 114. Annual Report on Impact of Offsets.

Section 114 of the bill amends section 309 of the Defense Production Act, which requires the President to annually prepare and submit a report on the impact of offsets on defense preparedness, industrial competitiveness, employment and trade.

The amendment specifies the Secretary of Commerce as the official responsible for preparing the report on "offsets". Also, notice of offset agreements exceeding $5,000,000 in value, are to reported to the official designated in regulations promulgated by the Secretary of Commerce.

We oppose section 114 because it would create additional reporting burdens on U.S. industry and has the potential of leading to regulation of private business practices. Since the 1984 amendments which included the section 309 annual report to Congress, the Administration has devoted significant resources, including two major surveys of U.S. industry, in the preparation of five annual reports. The analysis in each of these reports has demonstrated that the impact of offsets in military export sales on the U.S. economy is negligible. In fact, the principal finding is that after taking into account the implementation of offsets, the net effect on the U.S. economy and U.S. trade is positive. On the basis of these studies, the Administration has concluded that there is little or no gain in continuing this reporting requirement. The Executive Branch has proposed repeal of section 309 in its entirety on three separate occasions.

Section 121. Small Business.

Section 121 amends Section 701 of the Act pertaining to small business participation in the programs authorized by the Act.

The provisions of this section are unnecessary as the existing statute adequately supports small business and as drafted would have a deleterious effect on the programs.

Section 122. Definitions.

Section 122 of the bill amends section 702 of the Act to add new definitions and amend others. New definitions that are added are: (1) "critical component"; (2) "critical technology"; (3) "domestic source"; (4) "nondomestic source"; (5) "industrial resources"; and (6) "services". This section also amends the definitions of "defense contractor", "facilities", "materials", "national defense" and "person".

We do not object to inclusion of the terms critical components and critical technology in the list of definitions, even though we are of the opinion that the current definitions are broad enough to include the terms. On the other hand the inclusion of the terms gives emphasis to the need to establish a strong technology base, with which we agree.

The definition of the word "person" has been amended to exclude the United States or any agency thereof, or any other government, or any of its political subdivisions, or any agency of any of the foregoing. We oppose this exclusion of governmental entities from the definition. Many contracts in the mobilization preparedness programs are carried out by these government entities. The rationale for removing these entities, as set forth in the section-by-section analysis as published in the Congressional Record, is that the entities have been included in the amendments to the Act where appropriate We find this not to be the case. Specifically, Title III has no mention of the government entities in any of its sections where "person" is used.

We recommend that the term "facilities" be further amended by inserting "or construction" after "use" on line 2 of page 22 of the bill. This addition is to cover architectural design and building contracts for facilities.

We agree with the inclusion of "Canada" in the definition of "Domestic source" thereby giving recognition to the North American Defense Industrial Base program.

We support the elimination of the word "atomic" in the definition of "national defense" thereby providing that all forms of energy programs are covered under the Act.

It is important that the section 702(11) definition of "Services" not be read as exclusive, that is, it should be made clear that use of the word "includes" is not meant to be limiting and does not exclude other "services", and that the specifically enumerated types of services are for illustrative purposes.

Section 123. Delegation of Authority: Appointment of Personnel.

Section 123 of the bill amends section 703 of the Act by rewriting the President's authority to delegate his powers and authorities under the Act. We object to this amendment as being unnecessary since it seems to be merely rewritten without substantive change. However, if the proposed amendment is to remain, the authority in the President to establish new agencies under subsection 703(a)(3) is restrictive because Federal emergency preparedness programs are peacetime programs and the time the President most needs this authority to establish new agencies is in time of crisis or war We recommend therefore, that the phrase "Federal emergency preparedness programs" be changed to "programs under the Act" to cover the possible need for this authority in programs other than for preparedness. Also, it is unnecessary and inappropriate to provide for the exception from the provisions of Title 5, United States Code, of personnel other than the head and assistant head of any such new agency, as provided by current law.

Section 124. Rules, Regulations, and Orders.

This section amends section 704 of the Act by offering a simplified version of the Act's current section relating to regulatory implementation of the Act's authorities. In addition to simplifying the language in Section 704, this section also drops the restrictions on control of natural gas usage by the President. This proposed action seems to enhance the discretionary power the President may employ in emergencies. We defer, however, to the Department of Energy on the advisability of the amendment.

Section 125. Antitrust Protections for Sanctioned Industry Consortia.

This section rewrites Section 708 of the Act, which currently provides antitrust defense to certain voluntary agreements authorized to assist the President in meeting defense preparedness requirements.

The Administration opposes expanding the antitrust immunity in the DPA as proposed by S. 1379. Antitrust treatment of joint ventures is being considered by Congress in the context of other more general legislative proposals The President has recently announced support for legislation that would require the courts to consider the competitive benefits of joint production ventures and that would limit antitrust liability to actual rather than treble damages where the parties notify the antitrust enforcement agencies of their activities. However, in order to improve the flexibility of the existing section 708, we recommend that section 8 of the Administration's bill be adopted.

Section 126. Exemption From Administrative Procedure Act.

This section amends Section 709 of the Act, which exempts regulations implementing the Act from the notice and comment provisions of the Administrative Procedures Act.

This proposed amendment would still provide for the Act's exception from the administrative Procedure Act as is presently in Section 709. However the amendment requires that each proposed rule or regulation relating to procurement shall be published for public comment in the Federal Register as required by section 22 of the Office of Federal Procurement Policy Act. We object to this amendment because it does not substantively change the existing section except for the requirement to comply with section 22 of the Office of Federal Procurement Policy Act and this is an independent requirement that need not be included in this section.

Section 127. Authority to Review Certain Mergers.

Section 127 would amend section 721 of the Act authorizing the President to assess the effect of a foreign merger, acquisition, and takeover on the national security.

We oppose this provision because:

Substituting "evidence " for "credible evidence" as one of the findings that the President must make before he can take action to suspend or prohibit a foreign acquisition on national security grounds could discourage investment flows because investors might believe that the change in the "evidentiary" standard in the proposed amendment from "credible evidence" to just "evidence" -- indicates a more restrictive investment climate in the United States.

Substituting "completion" of the transaction for the requirement that "the foreign interest exercising control might take action that threatens to impair the national security" as a trigger for possible Presidential action would focus on the fact of the completion and not on what action the foreign interest might take. The change would raise concerns that the United States regards foreign investment per se, as undesirable, regardless of the actions of the acquiring person.

Dropping the requirement that the foreign interest exercise control may raise needless questions as to what kind of relationship must exist between the foreign person and the U.S. company. If there is no control by a foreign person, there is no case for Presidential action under the Exon-Florio provision as currently drafted.

Part D - Technical Amendments

Section 131. Priorities in Contracts and Orders.

This section amends Section 101 of the Act by eliminating obsolete reporting requirements and adding the word "services" in the section. We strongly support the inclusion of the word "services" to Section 101. However, in the attempt to add the word "services" to Section 101, a drafting error was made and the word "allocate" was apparently inadvertently omitted. The word "allocate" should be struck from line 14, page 37 of the bill.

We oppose the provision that requires that the statutory finding under section 101(c) be submitted to Congress, as being unnecessary and an impediment to taking timely priorities and allocations actions to support programs that would maximize domestic energy supplies.

Section 132. Loan Guarantees.

This section updates titles for congressional committees receiving Title 301 certifications. We support the section.

Section 133. Investigations, Records, Reports, Subpoenas.

This section increases the fine specified in Section 705. It reflects current financial realities and is sufficiently large to serve as a deterrence, plus it makes the fine consistent with other similar fines in the Act.

Section 134. Employment of Personnel.

This section amends section 710 of the Act relating to the appointment of individuals from industry to serve without compensation in defense mobilization positions.

The Administration objects to the institution of a separate financial disclosure system for those individuals covered by this section, especially a system that requires more information to be publicly disclosed than that presently required of the highest level full time officials of the government. We prefer that section 9 of the Administration's bill be adopted. That proposal makes use of the public and confidential financial disclosure systems presently in effect in the Executive Branch. Further, in order to strengthen the appointment and use of these individuals consistent with high ethical standards and the government's need for these individuals at critical periods, we recommend that sections 10 and 11 of the Administration's bill also be adopted.

Section 135. Authorization of Appropriations.

This section updates references to the office of Management and Budget. We support this change.

Section 141. Synthetic Fuel Action.

We support the repeals of section 307 of the Act.

Section 142. Voluntary Agreements and Plans of Action.

We support the repeal of section 708A of the Act for reasons set out in the "Sectional analysis" of the Administration's bill.

Section 151. Authorization of Appropriations.

Section 151 of the bill amends section 711(c) of the Act to provide for appropriation authorization of $250,000,000 for fiscal years 1990, 1991, 1992, and 1993 to carry out the provisions of sections 301, 302, and 303 of the Act. Note that the appropriation authorization of $250,000,000 requested in the Administration's revised legislative package was for fiscal years 1991 through 1995.

Section 152. Sunset.

Section 152 of the bill amends section 717 by rewriting subsection (a), deleting subsection (b), designating subsection (c) as subsection (b) and deletes the second paragraph thereof, and by deleting subsection (d). With regard to subsection (a) there basically is no substantive change to the sunset provisions, except that it specifically sets out the sections effected by the termination date rather than except sections from the date. By specifically indicating the sections, there is always the question -- did they intend to make sections 305, 306, 308, 709, 710, 713 and 715 permanent legislation? We recommend that subsection (a) be left the way it is by designating the specific sections that are saved from termination, that way you know which sections are permanent without having to go through the Act to make this determination. We also recommend that the current provisions of subsection (b) be left intact. Specifically, subsection b)(3). This subsection is important if new agencies are formed by the President and then terminated. It is noted that the proposed amendment removes section 708 as permanent legislation, however, the Administration opposes that elimination.

Section 201. Industrial Capabilities Committee.

This section directs the President to establish an Industrial Capabilities Committee or other appropriate forum.

The Administration opposes this section because it would interfere with existing programs which perform this function.

Section 202. Integration of National Security Policy and National Economic Policy.

This section recommends the President designate the Secretary of Defense as a member of the Economic Policy Council and establish a Defense Working Group within the EPC.

The Administration opposes this section as an unnecessary intrusion into the President's right to organize Executive Branch functions.

Section 203. Assessing Industrial Responsiveness Capabilities.

This section recommends that, from time to time, the President conduct exercises to assess the capability of the defense industry's capability to respond to increased demands for defense material and services under various graduated mobilization response conditions.

We strongly support the provision for gaming and exercising graduated mobilization response.

Section 211. Encouragement of Investment In Advanced Manufacturing Technology and Process.

This section directs the President, acting through the Administrator for Procurement Policy, to prescribe an acquisition policy that encourages contractors to invest in advanced manufacturing technology, advanced production equipment, and advanced manufacturing processes.

We oppose this section since the provisions are now included in the Federal Acquisition Regulation (FAR) Part 15.905-1(d) and DOD FAR Supplement DFARS 215.970.1(c) that provide for the consideration of contractor capital investments in developing profit objectives Those FAR and DFAR provisions appear to already implement the authorities proposed in subsection (1) of Section 211. Subsection 2) of Section 211, would require assignment of increased weight to source selection criteria relating to the efficiency of production. This weighting would benefit all offerors, including foreign offerors. To apply this provision to just domestic concerns would be anticompetitive, could invite retaliation and could harm the defense industrial base.

Section 212. Recognition of Modernized Production Systems and Equipment in Contract Award and Administration.

This section encourages investment in modern industrial facilities and production systems through acquisition policies that will provide recognition in contract award decisions, increased allowances for profit, and sharing in the benefits of "Cost Savings."

We oppose this section as unnecessary since an acquisition policy similar in intent to that prescribed in Section 212(a) is now provided in DOD Directive 5000.44, "Industrial Modernization Incentives Program" (IMIP). The specific inducements suggested in Section 212(b) will be reviewed to determine if they should be incorporated in DOD Directive 5000.44 and whether a policy similar to the IMIP provided in 5000.44 should be made applicable to civilian agencies.

Section 213. Support for the Development and Application of Critical Technologies.

This section directs the President, acting through the Administrator for Procurement Policy to prescribe an acquisition policy authorizing a departmental secretary or agency head to restrict to domestic sources the competition for all or a portion of contract opportunity to fulfill the requirements for materials, components, or items of supply that are the products of, or are manufactured through the application of a critical technology as defined in Section 702 of the Act.

We oppose this section because the Competition in Contracting Act of 1984 (P.L. 98-369, July 18, 1984) now provides authority to use other than full and open competition when it is necessary to award a sole source contract to maintain the industrial base.

This authority is implemented in Section 6.302-3 of the FAR and further authorities are not considered necessary for this purpose. In addition, we believe that the provisions could potentially violate the GATT Government Procurement Code if a "critical component" or "critical technology" determination is made for products covered by the Trade Agreements ACt of 1979.

Section 214. Procurement of Critical Items of Supply.

This section provides the President, acting through the Administrator for Procurement Policy, additional authority through acquisition policies that will allow for the directing of contracts to support domestic firms that are developing and applying emerging technologies critical to national defense requirements.

We oppose this section.

With respect to subsection 214(a) this proposed policy has already been implemented in FAR 6.302-3 and further authority is not required.

The requirements of subsection 214(b) are not considered necessary since the Buy American Act now provided for a 50 percent price evaluation preference for domestic products for the Department of Defense This evaluation differential is also applied to domestic products if 50% or more of the components are foreign. In addition, agreements have been entered into to waive the Buy American Act in return for other countries removing any similar barriers. Also, under the Trade Agreements ACt of 1979 (19 U.S.C. 2501), waivers of the Buy American Act are granted for purchases from sources in countries that have signed "The Agreement on Government Procurement," negotiated under the auspices of the General Agreement on Tariffs and Trade.

The requirement of subsection 214(c) to identify and publish a list of critical items, is already contained in Part 208 of the Defense Federal Acquisition Regulation.

Section 221. Evaluation of Offers From Sources Other Than Domestic Sources.

This section provides the President, acting through the Administrator for Procurement Policy, a basis to evaluate any price advantage enjoyed by a nondomestic contractor derived from unfair advantages.

We oppose this section because a 1986 DOD study mandated by Congress concluded that foreign firms do not enjoy an unfair competitive advantage from the non-application of U.S. socio-economic programs because many countries impose similar requirements. In addition, substantial difficulties would be encountered in fairly implementing the policy proposed by this section. The costs of complying with the various socio-economic requirements imposed by the U.S. or foreign governments have not been quantified and would be extremely difficult to estimate.

Section 222. Discouraging Unfair Trade Practices.

This section provides that if a contractor is found to have engaged in unfair trade practices, such contractor shall be subject to a determination of ineligibility for the award of contracts.

We oppose this section. Section 222 provides that a contractor that has engaged in an unfair trade practice as defined in the section, be subject to suspension and debarment The definition of "unfair trade practice" provided in section 222 is largely considered to be within the scope of current regulations (FAR subpart 9.4). Two of the three factors included in the definition; i.e violation of an export control law and false certifications are now covered. The only factor not specifically covered is an unfair trade practice as determined by the International Trade Commission (ITC). ITC rulings on unfair practices are not (as we understand) necessarily based on fraudulent or criminal intent. Accordingly, we do not want to automatically suspend or debar a contractor on the basis of these rulings.

In addition, both sections 221 and 222 could violate U.S. obligations under the GATT Government Procurement Code. Under the Code, contract officers may not discriminate against foreign products and suppliers from Code member countries in awarding Code-covered contracts. Also, for non-Code covered contracts, Buy American provisions of U.S. law already allow DOD to apply a price differential between imported goods and U.S. produced goods in evaluating offers for sale.

Section 301. Proceeds From Sale of Excess Industrial Plant Equipment and Facilities.

This section amends Section 204 of the Federal Property and Administrative Services Act of 1949.

The General Services Administration, the Secretary of Defense, and the National Defense Stockpile Manager can address the budgetary issues involved in the sale of excess industrial plant equipment and facilities, but, in concept, we strongly support the sale of obsolete and excess industrial plant equipment and facilities.

Section 302. Stockpiling of Critical Components.

This section amends section 12(1) of the Strategic and Critical Materials Stock Piling Act.

Section 401. Effective Dates.

This section establishes the effective date of the Defense Production Act Amendments of 1989 as September 30, 1989. The Act has since been extended to August 10, 1990, also, the Administration is seeking a permanent extension of the Act.

TESTIMONY OF
THE AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.

* * *

SUBMITTED FOR THE RECORD OF HEARINGS
ON AMENDMENTS TO THE DEFENSE PRODUCTION ACT

BEFORE THE
COMMITTEE ON BANKING, HOUSING,
AND URBAN AFFAIRS

UNITED STATES SENATE

March 22, 1990

The Aerospace Industries Association of America, Inc. (AIA) is the trade association representing the major manufacturers of commercial, military and businesss aircraft, helicopters, aircraft engines, missiles, spacecraft and related components and equipment.

AIA is pleased to have the opportunity to present its views on the various legislative proposals to amend the 1950 Defense Production Act (the Act), and this testimony for the record will highlight provisions included in Senator Dixon's bill (S. 1379) to reauthorize and amend the Defense Production Act of 1950, and S. 2168, the Defense Production Act Amendments of 1990, introduced by Senator Garn on behalf of the Administration. AIA has spent a great deal of time analyzing the Act, and has specific suggestions where we believe an approach different from those outlined in S. 1379 and S. 2168 would be more effective in strengthening the defense industrial and critical technology base.

Chairman Riegle is to be commended for his Committee's leadership in carefully examining solutions to the crisis facing our defense industrial and technology base. He and his colleagues, especially Senators Dixon and Heinz, have documented that in light of our increasing global economy and the migration of industries to other sources, there is an increase in foreign dependence. However, without first determining the effects of globalization on subcontractors, we really do not know if, or the extent to which, we are dependent upon foreign sources. There are complex, systemic reasons for the deterioration of our defense industrial base. This series of hearings has identified some of these reasons, and the legislation before the Committee proposes some solutions.

Status of the Aerospace Industry

The aerospace industries today represents the only U.S. manufacturing industry with a positive trade balance. Currently, the surplus stands at $20 billion. The industry is strategically and economically important to the nation. Our worldwide sales in 1989 exceeded $121 billion. New orders worth $157 billion were placed and the industry's backlog at the end of 1989 stood at $233 billion. Aerospace firms employ 1.3 million people, including 250,000 scientists and engineers and 500,000 trained workers.

These are impressive numbers. But the industry is under great pressure from many quarters: declining defense budgets, our own government's procurement policies, and foreign competition.

The United States today accounts for about 62% of the world's aerospace market, Europe has about 30% and Canada and Japan split the rest. A large proportion of our market share consists of sales of defense, space and missile products. Clearly, the U.S. share of the defense side of the market will shrink due to U.S. spending cuts and to the desire of Europe, Japan and other nations to develop their own domestic defense industries. As recently as 1983 we held an 8.5 to 1 favorable defense trade balance with Europe. That ratio dropped to 1.7 to 1 by 1987 as security assistance programs declined and were increasingly focused on fewer programs. Europe's aerospace companies are large, well-financed, actively backed by their governments, and technically proficient. AIA believes that today, Europe, not Japan or Korea, is the aerospace industry's immediate competitive threat as we enter the 21st century.

We must make up the difference through increased sales of commercial and appropriate defense systems and items abroad.

Mr. Chairman, the Defense Production Act of 1950 contains provisions proven to be useful to the Department of Defense in assuring that U.S. manufacturers and suppliers will give priority to the requirements of providing for the national defense. Reauthorization of the Act has become routine. However, in 1984 and again in 1986, Congress amended the Act to direct attention to the impact of foreign trade on the defense industrial base. Last year, Senator Dixon introduced S. 1379 to update and amend the Defense Production Act to stem the erosion of our defense industrial and technology base. In doing so, Senator Dixon necessarily raised important questions about the role of government with respect to the competitive future of American industry.

As a result of our growing global marketplace, we have seen other nations increase their preeminence in developing specific products. This has been particularly true in the world of commercial products. For the first time in history, emerging commercial products are driving the development of military items, thereby increasing the use of foreign sources for military components.

AIA is committed to ensuring the development of critical technologies and has established a non-profit foundation, the National Center for Advanced Technologies, (NCAT) to provide a forum for joint cooperation among industry, government, and academia. NCAT is coordinating AIA's Key Technologies for the 1990s by developing a national consensus on the advancement of future essential technologies for global industrial competitiveness.

We will now address those provisions of S. 1379 which impact the aerospace industry.

Title I -- AMENDMENTS TO THE DEFENSE PRODUCTION ACT OF 1950

We are in agreement with most of Title I of the bill but with several key exceptions. The most notable are our opposition to Section 114's treatment of offset agreements, the amendments to the Exon-Florio provisions (section 127) and the definitions in Section 122 which would virtually disqualify some major defense contractors as a "domestic source" for purposes of the Defense Production Act.

Part B -- Amendments to Title III of the Defense Production Act

Section 111. Expanding the Reach of Existing Authorities under Title III

Critical Technologies Use

Under S. 1379, the authority in current Title III of the Act would be available for the Department of Defense (DoD) to "purchase critical technologies." Rarely does the Government purchase the actual technology; more commonly, DoD purchases items using, or containing the application of critical technologies. To more accurately reflect this relationship, AIA suggests striking "a critical technology for" where it occurs in this section and replacing it with "item using a critical technology which is essential to" the national defense.

Section 113. Defense Production Act Fund

Financial Program Limitations

Under current law and S. 1379, each of the individual Title III financing programs is subject to a cap on the amount of assistance that can be provided under that program. Additionally, S. 1379 places a cap on the overall Defense Production Act Fund (the Fund) established by the bill. These twin caps would substantially inhibit the flexibility to use the monies available in the Fund in the most appropriate manner to support the industrial base. For this reason, AIA proposes lifting the individual program caps, but maintaining the overall Fund cap to ensure fiscal responsibility.

Expansion of Defense Production Act Fund Uses

Under S. 1379, the Fund is to be available to finance current authorities only (as modified by S. 1379). In AIA's view, the health of the U. S. defense industrial base can be significantly strengthened if critical financing needs of prime contractors and subcontractors who perform research and analysis in areas of critical technologies were included in this financing arrangement. Toward this end, AIA has two additional financing proposals -- full recovery of Independent Research and Development/Bid and Proposal expenditures and increased progress payments -- for work in these critical technologies. (For a further discussion on these items, see our discussion of Title II, Part B -- Encouraging Improvement of the Defense Industrial Base.) Both of these items should be authorized through the Fund.

Fund Manager's Responsibilities

Under S. 1379, the Treasury Department is set up as the Fund manager with certain enumerated functions. AIA believes that there needs to be clear visibility into transactions concerning the Fund, as well as accountability to Congress and the Executive Branch. Explicit language should be added to the bill stating the Fund Manager's responsibility to ensure such visibility and accountability.

Section 114. Annual Report of Impact of Offsets

As long as buyers and sellers are free to bargain and compete, competing sellers will offer inducements to buyers. S. 1379 recognizes this reality. The bill does not eliminate offset arrangements. Instead, the bill seeks to assess the impact offset arrangements might have on the industrial base by requiring contractors to report any offset arrangement exceeding $5 million. AIA believes the contract-by-contract reporting requirements in Section 114 would seriously jeopardize the ability of U.S. companies to compete successfully in the foreign military market. Much of the information sought under Section 114 would be both burdensome for industry and add little to our knowledge of what is happening to the defense industrial base and why. Furthermore, such data, if improperly used, could jeopardize our chances of winning sales abroad and maintaining our current trade advantage in defense items.

There is a concern that offsets injure the defense industrial base, in fact, they effect a relatively small percentage of aerospace sales. Offsets annually total $2.5 billion. This $2.5 billion must be placed in the context of total sales in the aerospace industry exceeding $121 billion and international sales of $31 billion.

There are four key factors for success in defense export sales: 1. Political. 2. Financing. 3. Industrial Participation (Offsets). 4. Product.

In defense export sales, the best product does not always win. The outcome of the competition is very often decided by which package best meets the requirements of the internal domestic politics of the customer nation. Foreign competitors vying for a third country's business generally have two avenues for improving their competitive standing. One is competitive financing terms and the other is industrial participation or offsets and counter-trade. Our foreign competitors generally can offer better financing terms than we can. Their governments will finance military export sales; we are denied access to government-sponsored financing for military export sales. Industrial participation or offsets is the only competitive bargaining tool readily available to U.S. firms. We have used it effectively and responsibly. Governmental interference with offsets, beyond legitimate concerns for transfer of technology and compliance with national security interests, cannot help our ability to compete.

Under current law, the Office of Management and Budget prepares an annual report on offsets. S. 1379 would substantially expand this present reporting requirement and require contractors to report all offset arrangements exceeding $5 million. AIA strongly opposes this expansion of current reporting requirements. However, we recognize that further information is needed in this area. In order to provide credible information regarding the impact of offset arrangements on contractor subtiers, we recommend that the President be directed to prepare biannually a systematic examination of those subsectors which are considered critical to the production of key parts and components of major weapons systems, and which seem to be showing signs of particular weakness. This process should pay particular attention to sectors in which the number of firms doing business with DoD and its major contractors has shown a marked drop. Solutions would be based on a study of the reasons why domestic products have been replaced by foreign components in major defense systems. The study should examine the impacts of U.S. government procurement policies, foreign government subsidies, offset requirements, and difficulties associated with production processes, including environmental siting problems.

Part C -- Amendments to Title VII of the Defense Production Act

Section 122. Definitions

Definition of "Domestic Source"

Section 122 would classify many major defense contractors as nondomestic sources for the purposes of the Defense Production Act. Under this provision, a business entity would be required to perform all of its research and development, engineering, manufacturing, and production activities within the U.S. to be a considered a defense contractor of the United States. This provision failes to recognize that most of the government's major prime contractors have, of necessity or in support of national publica policy (such as the Carribean Basin Initiative) located certain facilities off-shore. As Congress develops solutions for overcoming deficiencies in the defense industrial base, care must be taken not to cut ourselves off from the best that's available. Often the best will be supplied by firms extremely active in international competition. These firms may not meet the definition of domestic sources for purposes of S. 1379.

Section 125. Antitrust Protections for Sanctioned Industry Consortia

There is a need in this nation for increased government encouragement of industry consortia on a broad based level to strengthen our defense industrial base. Currently, joint industry cooperation is reviewed on a case by case basis, thereby discouraging industry from pooling its resources to provide further competitiveness. AIA agrees with the approach taken by S. 1379 on this subject. Antitrust measures should be established to provide industry with protection from criminal or civil suits when undertaking a plan of action within the scope of the charter of the sanctioned consortium.

Section 126. Exemption from Administrative Procedure Act

Under current law, all actions, rules and regulations taken under DPA are exempt from the Administrative Procedures Act (APA). In time of war, when DPA was first enacted, that may have made sense. Although the APA exemption is retained under S. 1379, the bill subjects all rules and regulations to the notice and comment requirement of Section 22 of the Office of Federal Procurement Policy Act [OFPP Act (41 U.S.C. 418b)]. The key difference between APA and the OFPP Act procedure is that a limited opportunity for judicial review exists within the APA. AIA believes that the full APA procedures should be applied to DPA rules and regulations.

Section 127. Authority to Review Certain Mergers, Acquisitions, and Takeovers

Section 127 amends section 721 of the Act, (Exon-Florio provisions) concerning investigations of mergers, acquisitions, and takeovers by or with foreign persons that could affect national security. AIA does not support this change to the Act as relatively recent changes in jursdiction of such matters (namely the formation of the Committee on Foreign Investment in the United States) have not been in place for a sufficient length of time over which to judge their effectiveness.

Part D — Technical Amendments

Section 131. Priorities in Contracts and Orders

Under current law, the President retains the sole discretion to require priority performance of contracts when he makes a finding regarding specified criteria in the law.

In S. 1379, the authority may be exercised only if the President makes the determination that there is a need for the use of the priority and has reported that finding to the Congress.

While provisions in this section properly "update" the Act to take into account the inclusion of "services", AIA does not believe that additional restraints on the President's authority in the form of advance notification to Congress are necessary as a pre-condition for the use of that authority. For that reason, we recommend that this section be modified to delete that language requiring the President to provide Congress with advance notification.

Part F — Reauthorization of Selected Provisions

Section 152. Sunset

The current law expires on August 10, 1990. S. 1379 would extend the DPA authority through 1993. There is a broad recognition that DPA, as a stand-by emergency authority containing the critical Defense Priorities and Allocation System, is necessary. Congress has never failed to reauthorize the law. Rather than subject the law to periodic "threats" of expiration, the authority should be made permanent. AIA agrees with the Administration's proposal, S. 2168, in this respect. However, we suggest retaining limitations on the use of the Fund to the annual Appropriations Act review and approval, as required under the Congressional Budget Act.

Title II--ADDITIONAL PROVISIONS TO IMPROVE INDUSTRIAL PREPAREDNESS

Part A -- Industrial Capability and National Security

AIA agrees that there must be greater integration of national security and industrial base policies with our national economic policy. Several studies recently have documented the current disconnect between these disciplines, and the benefits that might occur should they be considered together.
S. 1379 proposes to address this bifurcation through two provisions. One (Section 201) would establish an Industrial Capability Committee to undertake studies on the industrial base and develop proposals and processes to expand capabilities in this area. The second (Section 202) would, by law, place the Secretary of Defense on the President's Economic Policy Council. AIA concurs with the general thrust of these two sections,

however, we believe the President should have the flexibility to seek studies and advice in a manner that makes the most sense to him. Therefore, we do not agree with the inclusion of language mandating the establishment of a Committee to undertake the study, or for the Secretary to be a member of the Economic Policy Council.

Part B -- Encouraging Improvement of the Defense Industrial Base
Part C -- Unfair Foreign Competition

These portions of S. 1379 introduce new procurement procedures which AIA believes will exacerbate the decline of the U. S. defense industrial base. For this reason, and the additional specific reasons detailed below, we strongly oppose the following sections of Title II:

Section 214. Procurement of Critical Items of Supply

This section requires the President to prescribe an acquisition policy: (a) permitting sole source awards from any domestic source in order to maintain at least one domestic source of any critical item of supply essential to national security; and (b) establishing a mandatory domestic subcontractor set-aside for major weapons systems acquisition, and permitting a price-preference in the government's evaluation for the use of such domestic sources.

The first portion of this policy can already be exercised at the government's option through exceptions contained in the Competition in Contracting Act of 1984 (P.L. 98-369), although the current law is not directed exclusively at maintaining a "domestic" source for such critical items of supply. The second portion furthers the dangerous practice of dictating contractors to target subcontracting awards to a particular class of subcontractors regardless of thether or not they are best able to meet the specifications of the contract. As the Defense Department seeks to adopt more commercial style buying practices and increase the quality of the goods and services it procures while working within an increasingly strained budget envelope, Congress should refrain from micromanaging the procurement process in this fashion. Furthermore, this provision would actually be counterproductive to the health of domestic sources by giving them a false sense of security. The development and maintenance of domestic sources can best be accomplished by awarding contracts to suppliers who measure up to world class competitive standards.

Section 221. Evaluation of Offers from Sources other than Domestic Sources

Section 221 of S. 1379 would require the President to develop an acquisition policy that would establish a system for discriminating against contract offers from foreign sources because of the "unfair advantage" (as defined in the bill) that a foreign firm may enjoy due to subsidization, or exemption from U. S. fair labor standards, environmental or socio-economic statutes.

This provision is "protection" for a domestic industrial base in a shrinking domestic purchasing base. Rather than benefitting U. S. industry, in all probability it will force foreign countries to respond in kind at a time when U. S. firms (and the U. S. Government) are seeking to open up markets on a reciprocal basis.

Section 222. Discouraging Unfair Trade Practicies

This provision would mandate the suspension and possibly the debarment of a firm found to have engaged in an "unfair trade practice" as defined in the bill. AIA opposes the statutory expansion of the use of suspension and debarment. Further, while the bill seeks to provide the same "protection" that exists in current regulations on this subject, in fact S. 1379 stipulates that any one of the three items in the bill constitutes "a lack of business integrity" -- the conclusion that the current process is designed to determine.

To accomplish the stated goals of the legislation in this area, AIA suggests two policy changes which would provide true stimuli to the industrial base.

1. Full Cost Allowability for IR&D/B&P

Industry Independent Research and Development (IR&D) and Bid and Proposal (B&P) efforts play a critical role in maintaining our technological leadership and preserving the strength of our defense industrial base. Despite its importance, and unlike other overhead costs, industry is currently required to subsidize the cost of IR&D/B&P because the government places an arbitrary ceiling on the amount of IR&D/B&P costs that a contractor can allocate to government contracts. By failing to pay its full proportionate share of IR&D/B&P, the government requires industry either to return less money to its shareholders, reduce its IR&D/B&P investment, or transfer the costs to non-government customers. IR&D/B&P is vital to the security strategy of the United States and to a competitive American economy. Both our security strategy and our industrial competitiveness are based in technology developed in part through IR&D/B&P. The Defense Production Act should be amended to require that all IR&D/B&P costs, like other overhead costs, be subject to full cost recovery of the allocated amount.

2. Higher Progress Payment Rates for R&D and Production of Critical Technologies

In recent years, the Congress and the Department of Defense have enacted a number of major policy changes which have adversely impacted the health of the defense industrial base. A reduction in progress payments from 90% to the current level of 80% (for large businesses) has been among the most damaging. While this may not appear to be a large difference, the effect of such a reduction is to double the need for working capital to 20% (An eighty percent progress payment rate signifies that the contractor is responsible for financing twenty percent). Aerospace firms use working capital for a variety of needs, but the greatest area of use is actual contract performance. Since the contract must be performed, doubling the working capital requirement forces the contractor to attain capital from other available sources regardless of the financial consequences.

The reduced cash flows resulting from the progress payment rate reduction have made it extremely difficult for DoD contractors to attract new investors and sustain their private research efforts. Higher progress payments are essential if we are to maintain a strong research and development and investment oriented defense production base. We recommend that Title III of the DPA be amended to provide for higher progress payment rates for companies engaged in research, development or production of critical technologies.

Mr. Chairman, we thank you for the opportunity to present this testimony for the record and hope that in identifying our specific areas of concern we can work together to strengthen our defense industrial base.

ASSOCIATION
OF THE
NATIONAL DEFENSE EXECUTIVE RESERVE
P.O. BOX 10264
ARLINGTON, VA 22210

ANDER TRAINING DIVISION

October 24, 1990

Committee on Banking,
Housing and Urban Affairs
United States Senate
Dirksen Building, Room 534
Washington, DC 20510

Attention: Mr. Ed Malan

Dear Mr. Malan:

Following your telephone call to me on October 23, 1990, enclosed is a file copy of our last letter to the Committee which was an amplification of an earlier letter. Note the copy is front and back on one sheet, not two sheets as the originals were.

Since the date of those letters, the Association of the National Defense Executive Reserve has a new President:

Mr. Milton G. Nottingham, Jr.
4849 Upton Street, N.W
Washington, DC 20016
Telephone: (O) 202-785-3400
(H) 202-244-1244

Mr. Nottingham would be pleased to present testimony or further documentation should it be desired. I, too, would be pleased to testify or provide such other data as I could.

I hope your efforts to preserve the Defense Production Act will be successful.

Sincerely yours,

A. Atley Peterson
Rear Admiral, USNR(Ret.)
Past President

cc: Mr. Milton G. Nottingham

ASSOCIATION
OF THE
NATIONAL DEFENSE EXECUTIVE RESERVE
P.O. BOX 10264
ARLINGTON, VA 22210

26 April 1990

Honorable Donald W. Riegle, Jr.
Chairman
Committee on Banking, Housing and Urban Affairs
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

On behalf of the members of the Association of the National Defense Executive Reserve I am writing to express our support for the continuation of the Defense Production Act of 1950 as amended and the conversion to permanent status of Titles 1, 3 and 7 of this Act.

Historically, the citizens of our country have responded in every period of national emergency from the founding of the republic to the present. We believe that the ability of our fellow citizens to respond to future national emergencies is as important now as it has proven to be in the past.

While we welcome and support the moves toward democracy in Eastern Europe and the lessening of tension between the NATO and Warsaw Pact nations we think it is important that in this regard the United States be cautious as well as optimistic. We are very concerned about the potential for instability in the Third World, particularly over the possibility of such disturbing actions as the transfer of militarily critical technologies and resources to hostile countries and groups.

In light of the unsettled world conditions it would be a tragic mistake to fail to extend our base of civilian response to a national emergency by allowing the Defense Production Act to expire. The necessity of having on "stand by status" the ability to mobilize our industrial resources in a period of emergency is fully as great as the concurrent need for prompt response by our military reserve forces.

Of all the resources of our great nation none are more valuable than the talents of our people. As we must place increased dependence on reservists, as reductions are made in our active military forces, so too must Government depend upon skilled and seasoned executives to augment federal departments and agencies. Moreover, as is the case in the Armed Forces, National Defense Executive Reservists are far less expensive to train and maintain than their active duty counterparts.

There are approximately 2,000 National Defense Executive Reservists (NDERs) who are assigned to thirteen critically important federal agencies including the Federal Emergency Management Agency, the Interstate Commerce Commission and the Departments of Defense, Commerce, Energy, Interior and Transportation. In a period of national emergency the NDER's will bring to the federal government management skills and technical expertise that will be essential in mobilizing our industrial resources to meet both the military and civilian needs of the nation. The Defense Production Act of 1950 Section 710.E provides the Congressional authority for these civilian reservists and we believe the continuation of this program is vital to our national emergency preparedness.

Mr. Chairman, we trust you will bring this letter to the attention of the Members of your Committee and include it in the Committee's report on the hearings relative to the continuation of the Defense Production Act of 1950.

Sincerely,

A. Atley Peterson
Rear Admiral USNR (Re't)
President

cc: Hon. Jake Garn
Ranking Minority Member
Committee On Banking, Housing and Urban Affairs
United States Senate
Washington, D.C. 20510

DR. WALTER LABERGE
CHAIRMAN OF ADVISORY PANEL TO THE
OFFICE OF TECHNICAL ASSESSMENT
ON
"HOLDING THE EDGE, MAINTAINING THE DEFENSE TECHNOLOGY BASE"

TESTMONY ON S. 1379
BEFORE
COMMITTEE ON BANKING, HOUSING AND URBAN AFFAIRS
U.S. SENATE
MARCH 22, 1990

Mr. Chairman:

Thank you for the privilege of testifying before the Senate Banking Committee on S. 1379, the Defense Production Act Amendments of 1989. My name is Walter LaBerge. I now live in Aptos, California.

I speak on the basis of experience gained from long periods of senior executive responsibility within US aerospace industry and by government service through Presidential appointments within the DOD, Military Departments, and as an Assistant Secretary General of NATO.

In addition, I recently had the opportunity to Chair the Office of Technology Assessment Defense Advisory Review Panel in consideration of "Holding the Edge, Maintaining the Defense Technology Base. My review panel consisted of experts from industry, academia, and from not-for-profit private institutions. Much of my testimony today reflects the opinions and the intensity of my comrades on that panel.

My remarks are also heavily influenced by my home being 5 miles from the surface epicenter of the recent 7.1 Richter Scale earthquake.

There is, I believe, an important parallel between that massively destructive, near instantaneous geological readjustment to long unrelieved pressures and the probably comparably disastrous and rapid readjustment of our own United States Defense Industrial Base to those continuing build up of pressures which now beset it.

As with the recent earthquake, damage to our industrial base may not be limited after its rapid readjustments begin. However, equally similar to the case of big earthquakes, protection implemented before the fact can importantly mitigate the effects on our defense base as it gives way to its intense business pressures; pressures which are now almost impossible to change

S. 1379 is an important, and in many ways almost singular, effort to provide damage limiting to what I believe has to be an upcoming, very serious, readjustment of our defense industry.

I wish to applaud very much what you are now doing and to offer my assistance in any way to further help your objectives.

However, the current Defense Production Act and the proposed modifications to it do not, in my opinion go far enough to adequately respond to the dimensions of what I believe to be the problem or to be its urgency. That these proposed modifications are not more dramatic is not unreasonable, since I consider those who speak to you use a much more muted voice than that appropriate to the dimensions of the pressures on their defense industries, both prime and subcontractor.

Why here, in Washington, in what is arguably the "Chicken Little, or the sky is falling down" capitol of the world, this muting of concern exists is itself interesting. As it turns out, almost every element that might stridently come to you urging extreme action has cause, each for its own different reason, for caution and hesitation. However, I do believe that when pressed each would tell you they believe as I do.

From my perspective, the reasons for this muting are much as follows;

- The new civilian DOD administration has yet to be in office long enough to create the infrastructure necessary for it, in a quantitative way to assess the situation and with authority to propose definitive solutions
- The uniformed services, which do have continuity, do not believe it their job to individually change what is clearly a commonly shared industrial base. Further, it is not unlikely that they, having less money than they feel they need, will not oppose continuing the odious practices of arbitrary profit limiting and of coercing its industry into large sharing of the costs of its new programs
- Moreover, there are few, if any think-tanks to whom the government might turn for insight; and none who have chosen to develop an especial expertise and commitment to the understanding of defense industry economics.
- And lastly, Industry finds it difficult to openly forecast what it foresees to be the dimensions of its future financial difficulties Since aerospace stocks are held so heavily by institutional investors aerospace companies may well be properly concerned over the reaction of this particular investor base, which is so notoriously fickle, short term in its interests, and continuously churning its assets for immediate gain.

As a consequence, none of the people, whom you might think would, can choose to forecast to you the full dimensions of the assault on their industry, or the resultant drying up of investment in advanced technologies, new products, new facilities, or indeed, of their entire corporate commitment to the defense business itself Today, the businesses of our defense base are not good ones to plan to be in for the future, for at least the following reasons;

1. It is a bad business to be in today, as evidenced by every market analyst and by the prices commanded by defense stocks.

2. The internal US defense market for the foreseeable future will be declining, not growing. With this decrease of available business will automatically come, from normal competition, both lesser business volume and significantly less profit for each dollar of that lesser volume

3. The overseas military sales market (which today is a great source of industry profit) bodes poorly as well. As a consolidated EEC92 comes on line and as the Europeans learn from AirBus Industries how to compete with us, we ought to confidently expect to lose European markets to the EEC and a big part of the third world's as well.

4. US tax policy for facility investment recovery, combined with DOD commitment to frequent production recompetition, already has removed incentive for Board of Director approval of investment.

5. Our traditional US technological advantage also appears to be destined to ebb. Natural short term defense industry instincts for survival are forcing use of their discretionary funds for solicitation of immediate business and not for long term technology development. This non-helpful situation is much abetted by DOD demands for large cost sharing as a price of entry into their businesses.

Like in the case of the earthquake, something has to give, and when it does, it will be violent and very damaging to our defense industrial base. What we need now is the equivalent of the "building codes" which will allow the strongest part of our base to survive and build for the future not repair damage of the past.

Notwithstanding all the preceding, I believe that S.1379 should go ahead substantially as proposed. Especially, it should emphasize those parts which charge DOD with organizing to give everyone better understanding of the dynamics of its future industrial base.

In that regard, I believe you should more strongly insist that a broad infrastructure with continuity of intellectually independent, professional, analytic talent be established in various places in the country. This broad base of independent thought is necessary to adequately understand the economic dynamics of the components of our defense industrial base.

One of the first tasks for this new analytic capability should be the understanding of whether a stand-alone defense industrial base is either possible or desirable in the world of tomorrow My own belief is that it is not, and that the most important use of "dual use technology" will be in forming "dual use manufacture" which joins the commercial strength of the nation more intimately to our defense base

You, as a committee, also need to ensure that Commerce and Defense act as one in our competition with the outside world. We are the only nation, civilized or not, that acts as if these market places were two different, unconnected worlds.

Lastly, may I suggest that the Defense Production Act be rewritten when the full dimensions of what needs to be done become more evident. I also believe that this committee and everyone else concerned with our industrial base issue need be open minded on what "free enterprise" means these days, and that we no more deprive our vital defense industry of what it needs, than the others you now work with to create environments conducive to their success

In closing, let me reiterate that it would be a shame to let the finest nation in the world with the finest technological base in the world, fail because we failed in applying intellectual effort to understand its straightforward economics and its social behavior.

۱۴۶

DEC 1 7 19

Y 4.B 22/3:S.HRG.101-958 C.1
Legislative proposals
Stanford University Libraries
3 6105 045 182 628

DATE DUE			

STANFORD UNIVERSITY LIBRARIES
STANFORD, CALIFORNIA 94305-6004

GAYLORD